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SOME CONTRIBUTIONS TO GEOGRAPHY.

MASON AND DIXON'S LINE.

TEACHERS in all parts of the State will thank us for presenting, as we do below, a very complete outline of the history of the famous Mason and Dixon's Line. It is the substance of a "Note" supplementing a history of West Chester, published by Messrs. Wood and James in 1857. We take pleasure also in appending to it a portion of a letter relating to the same subject, recently received from J. Smith Futhey, Esq., of West Chester, a gentleman who has given much attention to local history.

THE LINE.

Everybody has heard of the remarkable Line which bears the names of the surveyors, and forms part of the southern boundary of our ancient bailiwick, but everybody—even in Chester county—does not know its exact history, nor how that curious little peak on the maps of our territory happened to run tapering down to a mathematical point, between the curved line of New Castle county and the right line of Maryland. It is one of our geographical celebrities, and deserves to be understood by all intelligent persons residing in its vicinity. The phrase, "Mason and Dixon's Line," has been echoing in our ears ever since 1820—when, during the excited debate in Congress on the question of excluding slavery from Missouri, that eccentric genius, John Randolph, of Roanoke, was continually harping on the words, and those words were as constantly reiterated through every newspaper in the land. The phrase thus became as common and familiar among the people as that other used by old Felix Walker, of North Carolina, on the same occasion—who, when the "question" was impatiently demanded, declared that his constituents expected to hear from him, and before the vote was taken he "must make a speech for *Buncombe*," one of the counties of his district.

This is not the place, nor is the writer of this note the person, to furnish a complete, detailed account of the memorable controversy between the Lords Baltimore and the family of Penn, which lasted from 1682 until 1767; yet a full history of it, with all its romantic, and sometimes riotous, border incidents—notwithstanding the interesting memoirs already written—is still a *desideratum*. The object here, however, is merely to attempt a synoptical view or condensed sketch of the protracted contest, and especially of the operations of the two men who carried out, as nearly as they could, the *final agreement* of the contending parties, after an inveterate and costly dispute of more than three-fourths of a century.

At the first planting of British colonies on the Atlantic slope of this continent, the whole territory seems to have been comprehended under the names of *Virginia* and *New England*, including some settlements of Dutch and Swedes on the shores of the Hudson and Delaware—then called the North and South rivers. The states which now intervene had no existence at that day. In 1632, Charles the First granted to Cecilius Calvert, Lord Baron of Baltimore, "all that part of the Peninsula, or Chersonese, lying in the parts of America between the ocean on the east and the Bay of Chesapeake on the west, divided from the residue thereof by a right line drawn from the promontory or headland called Watkins' Point, situate upon the bay aforesaid, and near the river of Wighco [Wicomico?] on the west, unto the main ocean on the east, and between that boundary on the south and that part of the Bay of Delaware on the north which lieth under the fortieth degree of latitude, where New England terminates."

Under this grant Lord Baltimore and his descendants claimed the whole Peninsula, from the abovementioned "right line" to the fortieth degree of

latitude; but his title, in strictness, extended only to that portion of it hitherto unsettled or uncultivated; (*hactenus inculta*) and the Dutch and Swedes had previously settled on the western margin of the Delaware. The Duke of York subsequently conquered not only the Dutch settlements east of the Delaware, (now parts of New York and New Jersey) but also those on the western shore, and exercised sovereignty over them until 1682, when he transferred his claim on the western shore and Bay of Delaware to William Penn, who had early perceived the importance of owning that side of the river all the way from his province to the ocean; and hence the annexation of the "three lower counties on the Delaware," now constituting the state of that name. The title being contested, and the late owner being now King James the Second, it was ordered by a decree of his Council, in 1685, "that for avoiding further differences, the tract of land lying between the Bay of Delaware and the eastern sea on the one side and the Chesapeake Bay on the other, be divided into equal parts by a line from the latitude of Cape Henlopen to the fortieth degree of north latitude, the southern boundary of Pennsylvania by charter; and that the one-half thereof lying toward the Bay of Delaware and the eastern sea be adjudged to belong to His Majesty, and the other half to the Lord Baltimore, as comprised in his charter."

The decrees of Royalty not being as debatable just then as they have been since, of course the recent conveyance of the eastern half of the Peninsula to William Penn by His Majesty, while Duke of York, was regarded as entirely valid. This decree, however, did not remove the difficulty existing between the Proprietaries, for the true situation of Cape Henlopen was still uncertain, and the middle of the Peninsula was yet to be ascertained.

The occurrence of death among the parties, and the existence of a litigious spirit, protracted the dispute until the 10th of May, 1732, when an agreement was entered into by the sons of William Penn and Charles Lord Baltimore, great-grandson of the original patentee of Maryland. They mutually agreed, "that a semicircle should be drawn at twelve English statute miles around New Castle, agreeably to the deed of the Duke of York to William Penn, in 1682; that an east and west line should be drawn, beginning at Cape Henlopen—which was admitted to be below Cape *Cornelius* (the *present* Cape Henlopen)—and running westward to the exact middle of the Peninsula; that from the exact middle of the Peninsula, between the two Bays of Chesapeake and Delaware, and the end of the line intersecting it in the latitude of Cape Henlopen, a line should be run northward, so as to form a tangent with the periphery of the semicircle at New Castle, drawn with the radius of twelve English statute miles, whether such a line should take a due north course or not; that after the said northwardly line should touch the New Castle semicircle, it should be run further northward until it reached the same latitude as fifteen English statute miles due south of the most southern part of the city of Philadelphia; that from the northern point of such line a due west line should be run, at least for the present, across the Susquehanna river, and 25 miles beyond it, and to the western limits of Pennsylvania, when occasion and the improvements of the country should require; that that part of the due west line not actually run, though imaginary, should be considered to be the true boundary of Maryland and Pennsylvania;" * * * * and "that the route should be well marked by trees and other natural objects, and designated by stone pillars, sculptured with the arms of the contracting parties, facing their respective possessions."

This important document, though seemingly so free from ambiguity, was afterwards the subject of much litigation, but was finally carried into complete effect, in all its parts. It accounts for the remarkable boundaries of the "three lower counties"—which counties, however, would not stay annexed to Pennsylvania, but took an early occasion to set up for themselves, (something like the Free-soilers of Kansas, at Topeka) and, at the Revolution, became the valiant little state of Delaware.

The quiet of the Provinces continuing to be interrupted by the conflicting claims of settlers along the Border, both parties applied, in 1737, to the King's Council for some order which should lessen or allay these ferments. An amicable temporary arrangement, however, was in the meantime effected by the parties, and they agreed, "that all the vacant land not now possessed by or under either of them, on the east side of Susquehanna river down as far as fifteen miles and a quarter south of the latitude of the most southern part of the city of Philadelphia, and on the west side of Susquehanna as far south as fourteen miles and three-quarters south of the latitude of the most southern part of the city of Philadelphia, should be subject to the temporary and provisional jurisdiction of Pennsylvania; and that all vacant land not possessed by or under either, on both sides of the Susquehanna, south of the said temporary limits, should be subject to the jurisdiction of Maryland, until the boundaries were finally settled, but to be without prejudice to either party." And when this convention was reported to the Council, His Majesty was pleased to order that the Proprietaries of the said respective provinces of Maryland and Pennsylvania do cause the said agreement to be carried into execution.

The order was accordingly promulgated by proclamation in the provinces, and commissioners were the following year appointed to run the temporary line—Richard Peters and Lawrence Growden on the part of Pennsylvania, and Col. Levin Gale and Samuel Chamberlaine on the part of Maryland. These commissioners commenced their active operations in the Spring of 1739, (their place of *beginning* does not appear) and after proceeding as far as the eastern bank of the Susquehanna, were interrupted by the departure of Col. Gale on account of death and sickness in his family, and the declaration of Mr. Chamberlaine, that he had no authority to continue operations without the attendance of his colleague.

The Pennsylvania commissioners, deeming their power to proceed limited to a joint operation with those of Maryland, were thereupon instructed by Governor Thomas to proceed alone. They accordingly did so; and ran the line westward of the Susquehanna, "to the most westward of the Kittochtinny Hills," which now form the western boundary of the county of Franklin. The course run by these commissioners, formed the famous "*temporary line*,"—so well known to the lawyers and early settlers along the southern border of Pennsylvania.

The controversy, nevertheless, still continued; the cause got into chancery, on the construction of the agreement of May 10, 1732, and was not decided until 1750. On the hearing, Lord Baltimore's counsel contended that it could not be carried into effect

by reason of its vagueness, uncertainty, &c. The Lord Chancellor (Hardwicke), however, overcame all the objections, urged in a long-winded argument of five days duration, and decreed a performance of the articles of agreement. He directed that new commissioners should be appointed within three months after the decree, who should commence their operations in November following. He further ordered that the centre of the semicircle should be fixed as near the centre of the town of New Castle as may be—that it should be described with a radius of twelve English statute miles, "so that no part of the town should be further than that distance from the periphery; and that Cape Henlopen should be taken to be situated as it was laid down in the chart accompanying the articles of agreement," i. e., at Fenwick's Island, about 15 miles south of the present Cape Henlopen.

The commissioners were appointed agreeably to the decree, and met at New Castle on the 15th of November, 1750. They fixed upon the court house in New Castle as the centre for drawing the semicircle; but Lord Baltimore's commissioners conjured up a new and unexpected difficulty by insisting that the radii of the semicircle should be measured superficially, without allowing for the inequalities of the ground, regardless of the absurd consequences resulting from such mode of measurement in creating inequality in the radii, and the consequent impossibility of describing anything deserving the name of a semicircle. Yet, as the objection was persisted in, the Proprietaries of Pennsylvania were again under the necessity of a further application to Chancery; and, in 1751, obtained a decision in favor of horizontal measurement. The commissioners again proceeded in their task. Having run the semicircle in conformity with the Lord Chancellor's decree, and marked it on the ground, they commenced their operations at the point then known as Cape Henlopen.

The fixing of the southern boundary of the "three lower counties" at Fenwick's Island requires explanation, inasmuch as the chart adopted by the Proprietaries, in their agreement of 1732, gives to the cape opposite Cape May, at the mouth of the Delaware Bay, the name of Cape Cornelius, (afterwards, for a time, called Cape James) and to the point, or "false cape," at Fenwick's Island, the name of Cape Henlopen; while the charts of the present day transpose that order, How or why the names became thus transposed on the charts and maps of our time seems not to be clearly understood; but that they have changed position since 1732 is an unquestionable fact.

As the Lord Chancellor had decided that Cape Henlopen should be taken to be where it had been agreed to be nineteen years before, the ingenuity of the commissioners of Maryland could devise no further objections in that particular; and they proceeded, in conjunction with those of Pennsylvania, to run the line across the Peninsula, and to ascertain "the exact middle" as a point from whence to run the northwardly line to form a tangent with the semicircle at New Castle.

The line between the two bays, in the latitude of the Cape Henlopen of that time, was then run; and after some further delay and cavilling about the distance by his commissioners, Frederick Lord Baltimore, weary of the controversy, entered into articles of agreement with Thomas and Richard Penn, July 4, 1760, which at length effectually closed their tedious and irksome altercations. By this agreement it was covenanted that the semicircle, as already run, should be adopted; that the distance across the Peninsula, in the latitude of Cape Henlopen, should be taken to have been rightly run, at 69 miles and and 298½ perches from the stone pillar east of "the mulberry-tree, at Fenwick's Island," marked with the arms of the contracting parties; that the middle of such line should be ascertained, and a stone pillar should be fixed at that point; that from such point a northwardly line should be run, whether the same should be due north or not, so as to form a tangent with the semicircle at New Castle, drawn with a radius of twelve English statute horizontal miles from the court house in that place, and past the said point of contact further north, till it reached the latitude of 15 miles south of the most southern part of Philadelphia; that from said fifteen-mile point a line should be run due west, to the utmost longitude of Pennsylvania; that all claim should be released to the territory within those limits then to be ascertained; and that the Penns should appoint commissioners to run the lines as yet unfinished.

The commissioners appointed under the deed of 1760, addressed themselves at once to the completion of the peninsular east and west line, and to tracing the twelve-mile circle—appointing to this end the best surveyors they could obtain. The mode of proceeding was to measure with the common chain, holding it as nearly horizontal as they could—the direction being kept by sighting along poles, set up in what they called *vistos*, cut by them through the forest. * * But the progress made was very slow; and at the end of three years, little more was accomplished than the peninsular line and the measurement of a radius."

This left to be ascertained and established, "the tangent, from the middle point of the peninsular line to the tangent point, the meridian from thence to a point fifteen miles south of the most southern part of the city of Philadelphia—with the arc of the circle to the west of it—the fifteen miles distance—and the parallel of latitude westward from its termination."

It remains now, simply and as succinctly as practicable, to relate, that on the 4th of August, 1763, the Penns, Thomas and Richard, and Frederick Lord Baltimore, then being together in London, agreed with CHARLES MASON and JEREMIAH DIXON, "two mathematicians and surveyors," "to mark, run out, settle, fix and determine all such parts of the circle, marks, lines and boundaries as were mentioned in the several articles or commissions and were not yet completed;" that Messrs. Mason and Dixon arrived in Philadelphia November 15, 1763, received their instructions from the commissioners of the two Provinces, December 9, 1763, and forthwith engaged in the work assigned to them; that they ascertained the latitude of the southernmost part of the city of Philadelphia, (viz: 39 deg. 56 min. 29.1 sec. north—or more accurately, according to Col. Graham, 39 deg. 56 min. 37.4 sec.), which was agreed to be in the north wall of the house then occupied by Thomas Plumstead and Joseph Huddle, on the south side of Cedar street; and then, in January and February, 1764, they measured thirty-one miles westward of the city (probably from the margin of the river Delaware) to the forks of the Brandywine, where they planted a quartzose stone—known then and to this day, in the vicinage, as "the star-gazers' stone"—on Joel Harland's land, a short distance west of the Chester county alms-house, in the same latitude as the southernmost part of Philadelphia (which stone is 6 miles 264 perches west of the meridian of the

court house in West Chester; and a due east line from it intersects said meridian 446½ perches, or nearly a mile and a half south of the court house, in a field of Amos H. Darlington); that in the spring of 1764—after a satisfactory "star-gazing," in the forks of the Brandywine—they ran, from said stone, a due south line fifteen English statute miles (in the first mile crossing the west Brandywine *three times*), horizontally measured by levels, each twenty feet in length, (and this was re-measured in like manner nearly three years afterward) to a post marked *West* ascertaining there, also, the latitude of the place (then computed at 39 deg. 43 min. 18 sec., now more exactly calculated to be 39 deg. 43 min. 26.3 N.); that they then repaired to a post marked *Middle*, at the middle point of the peninsular west line running from Cape Henlopen (Fenwick's Island) to Chesapeake Bay, and thence, during the summer of 1764, they ran, marked and described the tangent line agreed on by the Proprietaries. Then, in the autumn of 1764, from the post marked *West*, at fifteen miles south of Philadelphia, they set off and produced a parallel of latitude westward as far as to the river Susquehanna; then they went to the tangent point, and in 1764–5 ran thence a meridian line northward until it intersected the said parallel of latitude at the distince of five miles, one chain and fifty links—thus and there determining and fixing the northeast corner of Maryland. Next, in 1765, they described such portion of the semicircle round New Castle, as fell westward of the said meridian or due line north of the tangent point. "This little bow or arc"—reaching into Maryland—"is about a mile and a half long and its middle width 116 feet; from its upper end where the three states join, to the fifteen mile point, where the great Mason and Dixon's line begins, is a little over three and a half miles; and from the fifteen mile corner due ea t to the circle, is a little over three quarters of a mile—room enough for three or four good Chester county farms. This was the only part of the circle which Mason and Dixon ran.

The surveyors appear to have moved about considerably and to have repeated their operations at several points, but finally they proceeded with the intention of continuing the west line beyond the Susquehanna, to the end of five degrees of longitude from the river Delaware, in the parallel of said west line, and in the years 1766–7 they extended the same to the distance of 230 miles, 18 chains and 21 links, from the beginning of said line, at the northeast corner of Maryland (or 244 miles, 38 chains and 36 links from the river Delaware), near to an Indian war-path on the borders of a stream called Dunkard Creek, but were there prevented by the *aboriginal proprietaries* (the Indians) from continuing the said line to the end of five degrees of longitude (the western limits of Pennsylvania) which, in the latitude of said line, they found—and the commissioners agreed—to be 267 miles, 58 chains and 90 links; at the rate of 53 miles, 167.1 perches to a degree. Col. Graham, however, estimates the length of the southern boundary of Pennsylvania at 266 miles, 24 chains and 80 links.

The line thus run was subsequently (viz: November 9, 1768) certified by the commissioners to have been marked, described and perpetuated by setting up and erecting therein stones at the end of every mile, from the place of beginning to the distance of 132 miles, near the foot of a hill called and known by the name of Sideling Hill, every five-mile stone having on the side facing the north, the arms of Thomas Penn and Richard Penn engraved thereon, and on the south side the arms of Lord Baltimore. These stones were imported from England, and were hewn from that variety of calcareous rock known as *Oolite* or Roe-stone.

The line thus marked, is stated to have been measured horizontally, the hills and mountains with a sixteen and a half foot level, and the vista cut through the forest eight yards wide, was "seen about two miles, beautifully terminating to the eye in a point." The residue of the southern boundary line of Pennsylvania—something less than twenty-two miles—was afterward (viz: in 1782) run by other surveyors; it was not, however, completed and permanently marked until 1784.

The interference of the Indians having arrested the further proceedings of Mason and Dixon, those gentlemen returned to Philadelphia, and reported the facts to the commissioners; when they received an honorable discharge on the 26th of December, 1767—having been engaged in the service about four years. They were allowed twenty-one shillings, each, per day, for one month, from June 21, of the last year—and the residue of the time, ten shillings and six pence, each, per day, for the expenses, &c., and no more until they embarked for England; and then the allowance of ten shillings and six pence sterling, per day, was again to take place, and continue until their arrival in England. The amount paid by the Penns, under these proceedings, from 1760 to 1768, was thirty-four thousand two hundred pounds, Pennsylvania currency.

Dr. Maskelyne, the Astronomer Royal, in an Introduction to the Observations of Mason and Dixon, in the Philosophical Transactions, remarks: "In the course of this work, they traced out and measured some lines lying in and near the Meridian, and extended, in all, somewhat more than one hundred miles; and, for this purpose, the country in these parts [i. e. on the Peninsula,] being all overgrown with trees, large openings were cut through the woods, in the direction of the lines, which formed the straightest and most regular as well as extensive vistas that, perhaps, ever were made.

"Messrs. Mason and Dixon perceived that a most inviting opportunity was here given for determining the length of a degree of latitude, from the measure of near a degree and a half. Moreover, one remarkable circumstance much favored the undertaking—which was, that the country, through which the lines ran, was, for the most part, as level as if it had been laid out by art."

The astronomical observations for determining the length of a degree of latitude, were begun on the 11th of October, 1766, and continued to the 16th of the that month. The degree of latitude measured 363,-763 feet, about 68.9 miles. Col. Graham says "their measurement for determining the length of a degree of latitude" was performed "in the year 1768, under the auspices of the Royal Society of London, after they had finished the marking of the boundary between Maryland and Pennsylvania, and were discharged from the service of the Commissioners." The difference of latitude of the *Stone* planted in the forks of Brandywine and the *Middle Post*, in the Western Peninsular line—or the amplitude of the celestial arch, answering to the distance between the parallels of latitude passing through these points—has been found by Sector to be 1 deg. 28 min. 45 sec.

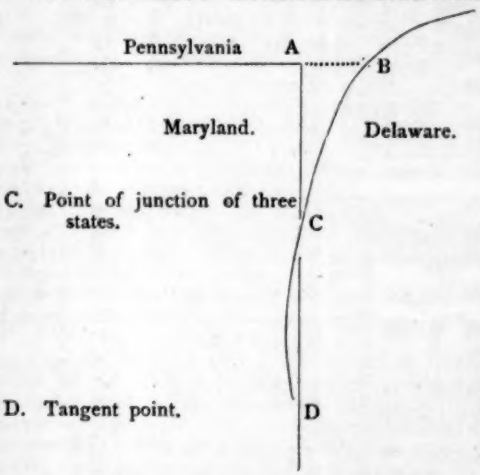
Until a more comprehensive and complete account of this celebrated controversy shall be given—with

all the proceedings and occurrences connected therewith, the lover of historic particulars will find much to interest and instruct him, in the scientific report of the labors of Mason and Dixon, in volume 58 of the Philosophical Transactions of the Royal Society, published 1769; in the lucid memoir, by James Dunlop, esq., read before the Historical Society of Pennsylvania, November 10, 1825; in the able report of Col. Graham, of the U. S. Topographical Engineers, who revised the surveys at the Junction of the three states, in 1849–50, and in the eloquent address before the said Historical Society, by John H. B. Latrobe, esq., of Maryland, November 8, 1854.

A copy of the final agreement, between Lord Baltimore and the Penns, is preserved in the fourth volume of the Pennsylvania Archives, printed in 1853; there is much of their correspondence, also, concerning their difficulties, in our Colonial Records, recently published, and there is a manuscript copy of the Minutes of the Commissioners who directed the operations of Mason and Dixon, in the Library of the American Philosophical Society. To these valuable documents, the compiler of this crude and imperfect note has been chiefly indebted for his materials.

FROM MR. FUTHEY'S LETTER.

"I enclose a draft of the lines at the intersection.



"From A to D is a due north and south line. In running Mason and Dixon's line, they commenced half-way between Delaware and Chesapeake Bay and ran in a northern direction, until they struck the tangent of a circle, drawn at twelve miles radius from New Castle. They struck this point at D. From there they ran a due north line to A, and found the point of intersection of the three states at C. The distance from A (which is the northeast corner of Maryland,) to C is a little over 3½ miles, or, accurately, *3 miles and 2,987.94 feet.* From A to B is about ¾ of a mile, or, accurately, .766 of a mile.

"The arc from C to D is about 1½ miles long, and its middle width 116 feet—the territory in this arc belongs to Delaware—it is so slight that is not perceptible on ordinary maps. At A there is a stone planted, having the letter M on one side and P on the other.

"At the point of junction of the three states, at C, there is a triangular prismatic post of granite, 18 inches wide on each side and 3½ feet above ground, marked with the letters P, M and D, facing the respective states.

"The land in this triangle belongs *territorially to Pennsylvania*, and is so given on our county maps —it contains probably 600 acres.

"While, however, this triangle, A B C, belongs territorially to Pennsylvania, it is a singular fact that it is *taxed in Delaware*, and her county and state officers exercise exclusive jurisdiction over it—offences committed there are punished in Delaware. Our Pennsylvania authorities never have exercised any authority over it in any way. It is part of London Britain township, in this county, but the authorities of that township stop at the line A B. In short, while it is really part of Pennsylvania, practically it belongs to Delaware.

"We can readily see how this, probably, originally occured—the whole country was woods, or largely so, the point A was marked by Mason and Dixon, and well known, the circular line was not marked, and the people not knowing precisely where it was, naturally considered A as the corner of the three states, and the authorities of our county have tacitly acquiesced, rather than create a disturbance. The circular line is unmarked; people know, or *suppose* they know, about where the line is, and they act accordingly.

"In 1849, commissioners, appointed to ascertain and mark the points of junction, re-planted stones at A and C and D, and ran about 3½ miles of the circular line. It is from their survey, which extended a short distance north of B, that I ascertain the distance from A to B. I have personally visited all these points, A, B, C, and D.

West Chester, Pa. J. SMITH FUTHEY."

INDIANA (PA.) NORMAL SCHOOL.

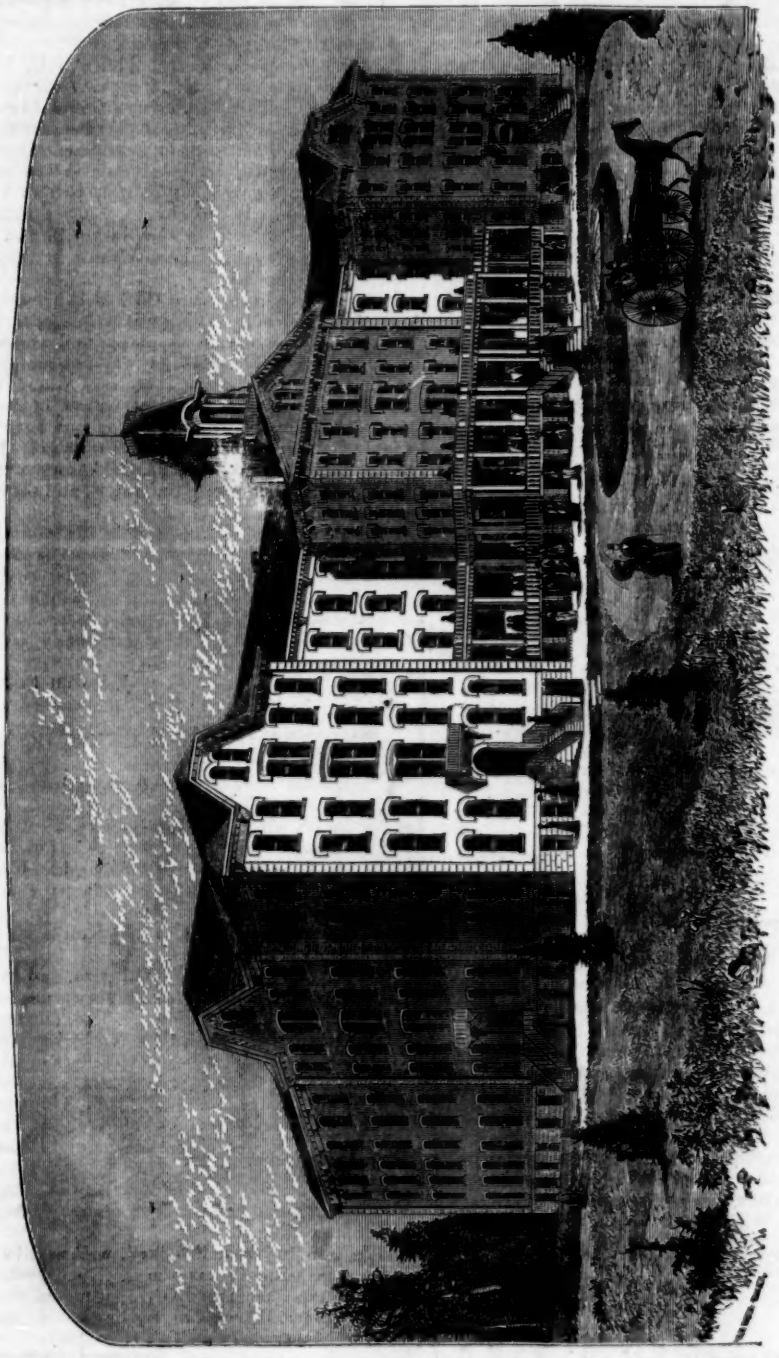
THE State Normal School at Indiana, Penna., a view of which is herewith presented, is located at the county seat of Indiana county, Pennsylvania, upon a branch of the Pennsylvania Central Railroad, about fifty miles northeast of Pittsburgh. It is in the midst of a beautiful section of country remarkable for its healthfulness, to be commended for its readiness of access, and noted for the picturesque scenery surrounding it on all sides.

The building is new, of ample size, and furnished in the most approved manner. It is warmed by steam and lighted by gas throughout. The dimensions of the edifice may be best understood by regarding it as three buildings—one fifty feet wide by a hundred and fifty feet in length; and two others, each of which would be forty-five feet in width by a hundred and eighty feet in length, the whole blending into one structure of beautiful proportions, and all four stories high above the basement. The basement story is nine feet in height, and the other four stories range from eleven and a half feet to fourteen feet between the floor and ceiling.

The building is well lighted, well ventilated, and has a general air of cheerfulness. The chapel, dining-hall, with the accompanying apartments, the model school room, library room, reading room, rooms for Literary Societies, Principal's rooms, reception room, parlor, lecture and recitation rooms, corridors, apartments for chemical laboratory, and private rooms for four hundred students—all are unusually well adapted to their respective uses. The buildings and grounds,

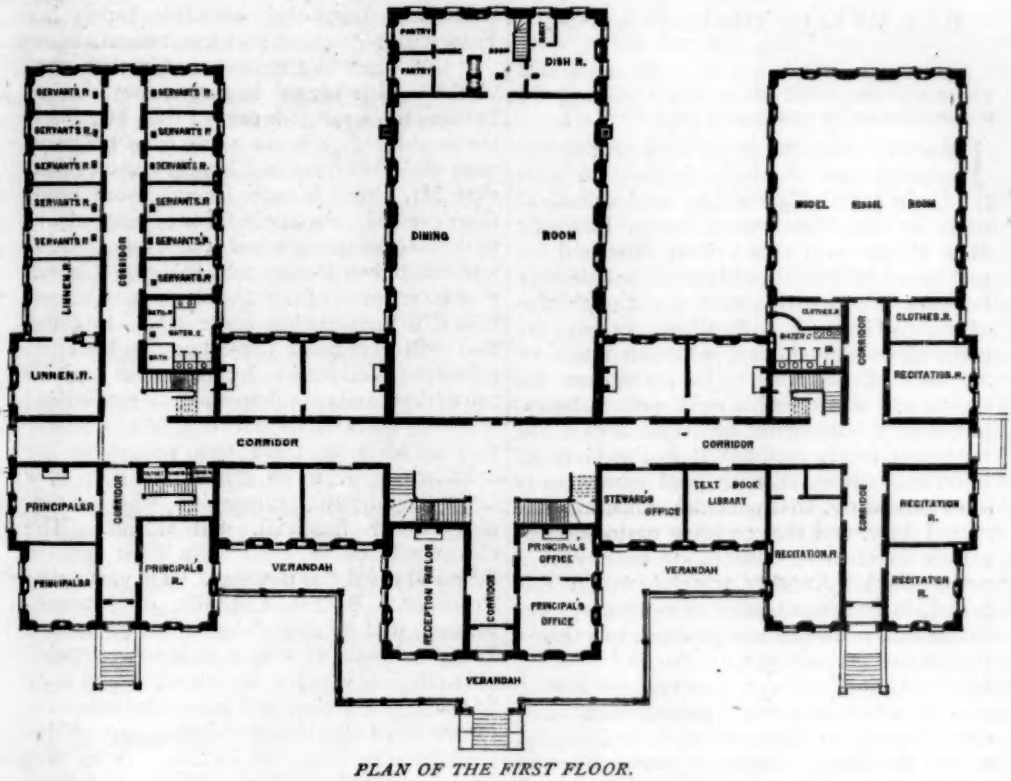
furniture, apparatus, &c., valued at about $200,000.

The Institution has just been provided with a very complete apparatus for illustrating Chemistry and Physics, so that its facilities, in this respect at least, are fully equal to those of any other normal school in the country. The community in which it is located is one eminently adapted to the success of such an enterprise, their sympathy with it having been expressed by the contribution of more than $60,000 in the way of substantial aid. Although it is less than a year since it was opened for the reception of students, yet more than 350 students have been enrolled in the different departments. The spring term opened April 17th. For Catalogues giving full information, address Rev. Dr. Fairfield, President of the Faculty; or Hon. Silas M. Clark, Secretary of the Board.

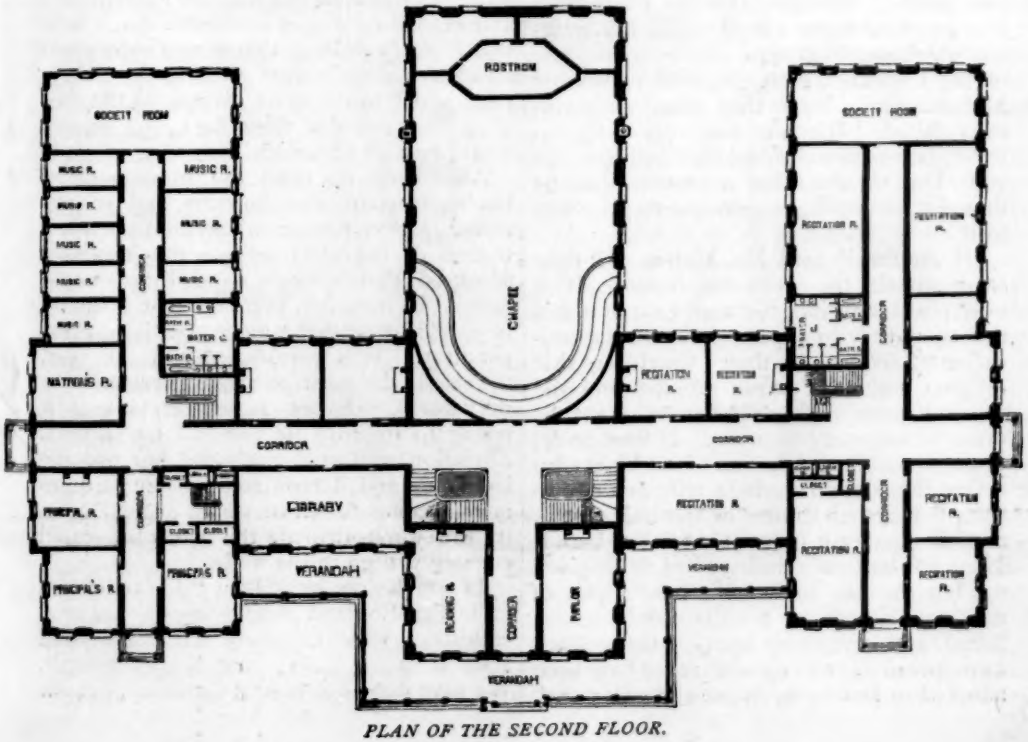


THE NEW STATE NORMAL SCHOOL AT INDIANA, PA.

[See accompanying description and ground plans.]



PLAN OF THE FIRST FLOOR.



PLAN OF THE SECOND FLOOR.

MAX MÜLLER ON EDUCATION.

[It is seldom we find so much sound educational philosophy compressed into so small a space as in the sentences below from an English journal.—ED.]

IN distributing the prizes and certificates gained by students in connection with the Oxford and Cambridge local examinations in the Manchester centre, Professor Max Müller said that he had inherited his zeal for education from his great-grandfather Barsdow, the first reformer of national education in Germany. Barsdow, perhaps, attempted too much, and was too much in advance of his time. But, whatever his strong and whatever his weak points, he established this one great principle, and it has remained firmly established in the German mind ever since—that national education is a national duty, that national education is a sacred duty, and that to leave national education to chance, church, or charity, is a national sin. Another principle which followed, in fact, as a matter of course, as soon as the first principle was granted, was this—that in national schools, in schools supported by the nation at large, you can teach only that on which all agree; hence, when children belong to different sects you cannot teach theology. However irresistible the argument was, the opposition which it aroused was terrific. Barsdow thought for a time that he could frame a kind of diluted religion which should give no offence to any one of the Christian sects, not even to Jews or Mohammedans, but in that attempt he naturally failed. His was a deeply religious mind, but national education had become with him so absorbing a passion that he thought everything else ought to give way to it.

"I confess," said Mr. Müller, "I fully share myself the same conviction. If it were possible to imagine a religion or a sect that should try to oppose or retard the education of the people, then I should say that religion cannot be a true religion and the sooner it is swept away the better. I say the same of national education. If there were, if there could be, a system of national education that should exclude religious education, that system cannot be the true system, and the sooner it is swept away the better. Many of Barsdow's theories had to be given up, but the two fundamental principles of national education remain firmly established, and have never been shaken. They have spread all over Germany; they have been adopted in Denmark, Sweden, Russia; they have lately found their way into Italy; but France and England still stand aloof.

"But when in England we see that convictions with regard to national education become too strong for party; that Mr. Forster would rather break away from his party than yield his deep and honest convictions, that Mr. Cross is more liberal, more bold, than even Mr. Forster in favor of compulsory national education; when your own excellent and outspoken Bishop asks that the Church may be relieved of the school; we may be certain that the time has come when England also will recognize these two fundamental principles—education by the nation and for the nation, and complete separation of school teaching and church teaching. And, believe me, as soon as these two principles are acknowledged, most difficulties that now beset the educational question, whether theological or financial, will vanish. The clergy will be relieved from their present false and invidious position. They, whether Protestant, Roman Catholic, or Nonconformist, will be able to teach during certain hours on week days and in Sunday-schools that religion which it is their right and duty to teach. The time will be amply sufficient, for the less a child learns of theology, as distinct from religion, the better. There will be no conscience clause, no conscientious scruples to disturb the teachers of religion; and as to their proper renumeration, I hold that if every shilling that is now subscribed for church schools were given to the clergy, particularly to the poor curates, as the religious instructors of their flock, the money would be well bestowed."

After dwelling upon the importance of having efficient schoolmasters, and recommending that education should be made a branch of the civil service, the Professor admitted that a large expenditure would have to be incurred, but said that it should be called by its right name; it is not expenditure, it is *investment*, and the best, the safest, the most lucrative investment in the world. Every nation at present is trying to improve its material by national education, and in the peaceful but not the less fierce and determined warfare of commercial competition, they may depend upon it, the worst drilled, the worst educated country will go to the wall.

In conclusion, he added: "I hear it often said that England should do for national education what Germany has done, what Italy is doing. No; that is not enough. We have done our best in Germany, but our

best is but poor work. Our difficulties are enormous. The soil is poor, and, therefore, the country will never be rich. Besides, we live between two Symplegades—between France on one side and Russia on the other—and we shall always have to spend our best energies in self-defence. There is the strongest feeling among the statesmen of Germany that the greatest efforts will have to be made for improving our national education; only what we want for it is what we are not likely to get—a long peace, and a Bismarck and Moltke rolled up into one Minister of Public Instruction. In England you have everything, and there is no reason why your national education should not be as much ahead of that of Germany as the education of Germany is beyond that of China. You have money, you have peace, you have public spirit, and you have, what is best of all, practical religion. I mean, you still do a thing, however much you may dislike it, because you believe it is the will of God. Well, then, invest your money, utilize your peace, rouse your public spirit, and convince the world that one-half, three-fourths, nine-tenths of real practical religion is education—national education, compulsory, and, it may be, gratuitous education."

EDUCATED MECHANICS.

A GREAT want in this country is skilled labor—the educated mind guiding the trained hand. Until this want is supplied, notwithstanding all the appliances for wealth that we possess, we will fail in obtaining complete success. We have coal, iron, and other useful minerals in almost unlimited quantities, valuable water-power, a climate so varied that nearly all the products of the whole earth can be raised among us, and a population to use manufactures in large amounts; but this lack of educated artisans still continues, much to our inconvenience and a drawback to our more rapid advancement. It is true that in many of our large manufacturing establishments there can be found highly-educated mechanics, and these are much prized by their employers, as they should be; but, as a general rule, not many such are to be had, as the vast majority occupy a lower rank in their calling—they are mostly hewers of wood and drawers of water. There is no deficiency in brain power with us; it needs only development and direction. If the thousands of youth, who are now serving as apprentices, were put in the way of obtaining a thorough education, in a few years we would see our manufactures advanced to a position we little dreamed of, and the fear of a low tariff be deprived of its force, as we would have the world for our market and not our country a market for the world.

Look for a moment at our apprentices of the present day. Taken from school with a bare knowledge of the rudiments, they are, of course, put at the simplest kinds of work at first, and then are advanced according as their aptness presents itself, and they are found capable of producing work needing greater skill, until at length age and supposed experience make them full-developed workmen. In many instances those mechanics who have real grit in them—the desire for knowledge—will use the brain with the hand, and by the aid of text-books, studied perhaps in hours taken from needed rest or when their fellows are frolicking, will acquire a large amount of information which will greatly aid in their work and be a source of real pleasure their life long. If we had schools where these youths who desire to be thoroughly educated in their profession could acquire the requisite knowledge, a vast deal of labor and time would be saved them. What are supposed to be the higher branches of the arts have their technical schools, and it would be considered presumptuous for anyone to work in these arts without having studied in one of the schools; and yet our manufacturers of iron, wool, cotton, silk and wood, without the advantages of these schools, must advance more by chance and experiment than by actual knowledge.

In the manufacturing districts of Europe many of these schools are to be found, where young men can acquire a complete knowledge of any branch of manufactures they may wish to engage in. Lectures are given, with diagrams of every piece of machinery used and the manner of using them; and the course of training is so thorough that a graduate needs but a little actual practice to make him a skilled workman. We have seen copies of lectures, as above described, in the hands of foreign workmen, taken down by them at the time of their delivery, which, for completeness of detail and accuracy, it would be difficult to excel. Such information gives an educated mechanic a broad, mental sweep; it frees him from narrowness and prejudice; he looks constantly for an improved condition in machinery, and is staggered at no results. His motto is "Excelsior." We are receiving a large number of these desirable workmen weekly,

and their influence will, in time, be felt throughout all the manufacturing interests of this country. We have only to make it pleasant for them, and they will continue to come, not as adventurers, but to become solid and respectable citizens.

Our native mechanics have nothing to fear from contact with them; they are not the ill-paid, half-starved laborers of Europe, but men who command good wages, and would have their price here, standing on the dignity of their profession, and unwilling to perform good work without its equivalent. It is owing to this kind of technical education that European manufactures are so excellent. By the large population they can, indeed, have more to work upon separate portions of manufacture than we, and thus a workman can acquire, through long years, a certain kind of skill; but that is not the kind of skill necessary to make a complete workman which comes only through education.

What is there in the way of our having these schools? With our wealth and improved machinery to experiment on, and noble-hearted manufacturers, who sincerely desire the welfare and advancement of the manufacturing people, as well as to have our country first in every good thing, can we not move in this matter? A great field of usefulness is open to us as a manufacturing nation, and it may be well for us soon to take advantage of it.—*N. J. Mechanic.*

WAITSTILL.

BY MARY L. BRANCH.

SUCH a nice little rosy-cheeked girl! She had on a brown calico dress, and a blue and white long-sleeved gingham apron. There were a few freckles where the sun had kissed her cheek, and her hands were tanned with may be a berry stain here and there, which soap and water had failed to remove. She had her school-books on her arm, and looked as bright and fresh, as simple and sweet, as all little girls ought to. She was coming to school in town, and this was her first day.

Good, plain Mr. Brooks, her father, lifted her out of his old farm-wagon at the school-yard gate, and seeing two or three young misses standing about, said, pleasantly:

"Won't one of you show my little girl where to go? She's coming to your school, and you must all be friends with her, for she's a stranger. Good-by, little Waitstill; I'll come to your aunt's for you Saturday morning."

And away the honest man drove, chirruping to his old gray horse, and never doubting but that his little daughter would be perfectly happy among so many of her own age.

She looked out a little shyly from under her sun-bonnet, after he had left her, and saw one or two of the girls making signs to each other and tittering. They thought it was so funny to see a little girl in a long-sleeved gingham apron and a sun-bonnet! And *so* comical that she should have come to their school in a dusty old farm-wagon. So they whispered and giggled.

"And did you ever hear of such a name in all your life?" asked Nellie Golden, rather too audibly. "Waitstill! How ridiculous?"

Were they making fun of her name? Little Waitstill looked around puzzled and wondering. She had never thought but that it was a pretty name, and she liked it, because she knew she was named after a gentle young Aunt Waitstill, who had died long ago, and whom she had never seen. But how strange all these new little girls were! Why didn't they speak to her, instead of whispering among themselves?

"I'm most afraid they're making fun of me," thought poor little Waitstill, and her face grew hot and red, and she stood uncomfortably twisting the corner of her apron, wishing she knew the way into the school. A pair of laughing black eyes were bent upon her.

"Will you please show me the way in?" asked little Waitstill.

"Wait still! Wait still!
And may be I will."

shouted the black-eyed girl, merry Nan Bush, the tease of the school. That made little Waitstill feel more confused than ever, and she was afraid she should cry in a minute more.

Just then another little girl came running out of the school-house toward the group by the gate. She had a bright, honest face, but Waitstill was afraid of her too, for no one yet seemed like a friend. This last comer was Bell Burney.

"What are you waiting out here for, girls?" asked Bell. "It's almost nine, and Sue is monitor. She'll ring the bell in a minute."

The girls began to move away, but Nan Bush lingered to whisper to Bell.

"There's a new scholar, fresh from the farm. Don't she look droll?"

"Why, I think she looks nice," said Bell promptly; "just like some of my father's pretty pictures. Is she afraid to come in? I'm going to speak to her."

Nan Bush ran off singing saucily,

"A farmer's life is the life for me,
I own I love it dearly!"

while Bell went up to Waitstill, and softly touched the little arm in the gingham sleeve.

"Come into school with me," she said, "and I'll show you a nail to hang your bonnet on. Let me take some of your books. What a pretty cover your spelling-book has!"

Waitstill smiled, and the tears which had almost come did not fall.

"I don't know anybody," she said confidentially; "I am going to school, and board at my aunt's, and go home Saturdays. Is the teacher good-natured?"

"Yes, indeed, she's real good," replied Bell. "Come, hurry, here's the place to put your bonnet, and now follow right along after me."

And so, guarded by Bell Burney, Waitstill got safely into the school-room; and there, if the girls *did* look at her, they did not dare to whisper nor laugh. The gentle lady-teacher gave her a desk near Bell's and asked her about her studies, so as to decide which classes she should enter. And when her les-

sons were set, Waitstill went to studying as hard as she could, for her mother had told her to be a diligent, obedient little girl all the time.

When it was recess she went out in the yard with the rest, and tried to feel natural and at home, but the girls were full of fun, and thoughtless, and every now and then some stray speech would make little Waitstill feel awkward and shy. Nan Bush seemed possessed by a very spirit of mischief, as she danced to and fro, flinging out saucy remarks, but Bell Burney stood staunchly by Waitstill, and drew her into some of the merry games that were going on.

"Do you really and truly like her?" whispered one of the other girls to Bell.

"Why, yes," said Bell; "I think she's real nice, and didn't you hear the teacher say she would be one of the very brightest of us about her lessons?"

"Well, I like her, too," said the other, hesitating a little. "But Nan Bush says it's funny to wear gingham, and come in an old wagon."

"My mother likes gingham very much," said Bell, practically, "and it is splendid to ride in a farm-wagon. You'd think so if you had ever been in one, going up and down the hills and past woods and orchards."

Waitstill's fortunes brightened a little that afternoon, when in the geography class she bounded Pennsylvania better than any of the rest, even Nan Bush. The girls got tired of teasing her, and she was fast learning all the ways and rules of the schoolroom. The sharp-eyed monitor never caught her even once whispering.

I'm going to love Bell Burney best of anybody!" she said earnestly that night to her aunt, just before she went home-sick to bed to dream of sun-bonnets and blackboards.

The "monitor of order," who sat at a desk on the platform, and watched to see that no one played, or whispered, or idled, never held her office more than a week, so there was a change every Monday morning. And the very next Monday, to the surprise of the whole school, Waitstill Brooks's name was called as monitor for the week—a mark of honor, the teacher said, for her remarkably good behavior.

Waitstill's heart fluttered as she took her books and passed up the aisle to the desk on the platform. She felt proud to think of what the teacher had said, but she was frightened at her new position, and wondered how she should ever dare to call aloud the number of any girl she might see misbehaving, which it was the rule for the monitor to do.

All went well enough for the first hour or so, but when the teacher became very much engaged with some puzzling problems in a mathematical recitation, mischief began to brew. Bits of paper began to be thrown, sure to be billets or something else contraband.

"Fourteen! Twenty-four!" said Waitstill in a rather trembling voice.

The offenders were two of the younger girls, and they became orderly at once. But a moment later, a more daring one drew an apple from her pocket, took a large bite of it, and then pushed it on toward a neighbor.

"Nineteen!" said Waitstill clearly, gathering courage with the consciousness of power. The apple slowly disappeared in the desk numbered nineteen.

This roused Nan Bush's attention.

"That little countrywoman is really getting uppish," she thought to herself, and she began to feel defiant and ready to tease. Waitstill saw her black eyes sparkling, and in a moment more the care-for-nothing girl made up a hideous, grotesque face at her, prolonging it till some of the smaller scholars were tittering uncontrolliably.

"Twenty-seven!" said Waitstill uneasily. But Nan only repeated the grimace a second time intensified.

"Twenty-seven!" said Waitstill again, with a spice of determination.

This drew the teacher's inquiring eyes upon them. Nan raised her hand for leave to speak.

"Please, ma'am," she said, "I was only trying to keep from sneezing."

"Oh!" exclaimed Waitstill impulsively, then checked herself.

"Twenty-seven may remain at her desk during recess," said the teacher, and turned again to her class and blackboard. The scholars were orderly enough after that, and demure little Waitstill began to feel more at her ease.

But Nan Bush did not forget "the little countrywoman's audacity," as she called it, and watched for some new chance to annoy her. It came at last when one day, as the girls were just let out for recess, Farmer Brooks was seen driving up the street with the same old white horse that always held his head down, and the same dusty farm-wagon, the back of which was all covered this time with a piece of brown bagging.

"Oh, there's father! there's father!" cried Waitstill joyously.

"Oh, what an elegant equipage!" laughed Nan mockingly; "and such a spirited steed! and how handsome your father looks! I wish he would give me a ride. Come, girls, let's all run to the gate and see the happy meeting of Waitstill and her father."

"You mean thing!" exclaimed one of the girls, indignantly, who had been friends with Waitstill ever since she had been helped by her in fractions. But three or four laughed, and joined sides with Nan.

Bell Burney, with great dignity for a little girl, followed Waitstill, who with flushed cheeks had hurried out on the sidewalk to see her father.

Farmer Brooks reined up his horse, and uttered an energetic "Whoa, there!" his whole face beaming with good-natured gladness at the sight of his little girl. In his own heart he had not the slightest doubt but that his darling was the pet of the whole school by this time, and that every girl there was her friend.

"So here you be, little one!" he exclaimed heartily. "Come out to see father, didn't you? And here are all your little mates! Why, what a lot of pretty faces!"

"Here's my best friend, father," said Waitstill, pointing to Bell Burney at her side.

"Bless her little heart, then!" said her father. "You must bring her home with you to spend vacation, Waitstill, and we'll show her how we live out in the country. I'm glad I came across you out here for I was just going to your Aunt Jane's. Here's something the boys sent you very particular."

It was a great brown paper bag, its sides well stuffed out. Nan Bush and her clique tittered on the other side of the fence. Waitstill and Bell peeped into the bag. It was full of butternut-meats, all carefully picked out in nice halves.

"Oh, butternut-meats!" exclaimed Bell. "How perfectly splendid!"

"Yes," said Mr. Brooks; "the boys were cracking out on the kitchen hearth pretty much all last evening."

Waitstill's few friends and half-friends, who were looking on with silent interest, visibly brightened. In anticipation they were already tasting butternut-meats. Two very little girls immediately deserted Nan Bush's party, and stood soberly by the gate.

"Tell the boys I thank them ever so much," said Waitstill.

"And that ain't all," said Mr. Brooks delightedly. "Where do you think I am going next?"

"To market, may be," said Waitstill a little softly.

"Why, what a little guesser you are!" exclaimed her father with admiration. Yes, to market it is. But you shall have a sight first, seeing you couldn't be there at the gathering."

And pulling off the covering of coarse bagging, he revealed a load of cherries. Baskets upon baskets full of the tempting fruit were packed close together.

"There's three kinds," said Mr. Brooks, looking round to all his audience for appreciation—"the black ox-hearts, and the red, and these little sweet ones half pink and half yellow. We stripped the three trees yesterday and here's *your* share, Waitstill, the best and brightest varieties mixed."

And with that he handed Waitstill a large basket brimming full of the biggest, ripest cherries, half veiled under green leaves; then bidding the whole group a jovial good-by, he roused up his horse, and rattled off to market.

Ah! who was the idol of the school then? Who, but little Waitstill, as with Bell to help her she carried the basket of cherries into the yard. "Aren't they splendid!" "What a good father you've got!" "I never saw so many at once in all my life!" "Are they sweet!" "Are they juicy?" "Oh, Waitie, do give me just one!" Such words as these were heard in all directions, and every one of Nan's adherents abandoned her on the spot.

Nan was taken aback. She walked up and down at a little distance, seeing cherries in every girl's hand, and hearing exclamations of enjoyment. Waitstill dispensed them liberally to all who came, and then seated herself on the grass to make two enormous bunches of the handsomest for Miss Graham and Bell Burney. Chancing to look up, she saw Nan a little way off, looking on. Nan's mouth was fairly watering for a taste of the fruit, but she was too independent to change her manner now and court Waitstill like the rest.

But Waitstill did not harbor malice; she wanted to please them all, and so she sent a double handful to Nan by Bell. Nan colored up to her crimps, and said as she took them:

"Well, she *is* a good-natured little thing, after all, Bell."

This was Waitstill's triumph. And when she supplemented it by a distribution of the bagfull of butternuts, her school-mates' hearts were won forever.

"It takes fire to bring out the beauty of silver," said Nan Bush, saucy as ever; "and if it hadn't been for me, you wouldn't have known half how good and sweet-tempered Waitstill is!"—*Christian Union.*

OUR birth is but a sleep and a forgetting;
The soul that rises with us, our life's star,
Hath had elsewhere its setting,
And cometh from afar;
Not in entire forgetfulness,
And not in utter nakedness,
But trailing clouds of glory do we come
From God who is our home.

BIOLOGICAL STUDIES.*

THE YEAST PLANT, ETC.

LIFE has been defined "as the aggregation of those functions which resist death." (Bichat.) Herbert Spencer defines it as the "definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external existences and sequences."

We do not know what life is. Leaving technical definitions, let us study some of its simplest phenomena. The science of life, whether animal or vegetable, is called Biology, from *bios*, life, and *logos*, a discourse. Biology is subdivided in *Zoology*, the science of animal life, and *Botany*, the science of vegetable life.

It is a very easy matter to distinguish between ordinary animals and plants, but as we descend the scale in both kingdoms, animals and plants approach each other in form and structure so nearly that to the present time, with all our vaunted knowledge and superiority, it is impossible to distinguish between certain low forms, and to place them in their proper sub-kingdoms.

Sponges were long classed as a vegetable growth. It is well known to scientists that some plants have wonderful *powers of locomotion* and that others are even endowed with instincts sufficient to catch and digest animal prey, but of these we may speak hereafter.

It will be well to remember from the start, that as life ascends in the scale, whether animal or vegetable, its complexity of organization greatly increases. Hence the proper way to commence the study of biology, is to take first the lowest and most simple forms.

We are all acquainted with *yeast;* we know it as a muddy fluid capable of exciting fermentation, and of causing a great increase of bulk—"rising," as the cook says—when placed in a mass of dough. Now, what causes this change? It is the growth of the yeast *plant.* You ask, "Where is it?" Let us examine our yeast carefully. Holding it up to the light, we see some particles floating in a liquid or plasma. We place some of the sediment upon a glass slide and bring it under the microscope. Now, see what we have. *A plant,* one of the very lowest type, in fact a plant made of a single round cell.

*We are indebted to Mr. Geo. G. Groff, of the Microscopical Laboratory, University of Michigan, for the interesting article herewith presented.—*Ed.*

We shall, as our studies progress, find that all higher plants are formed of the union of a great number of simple cells, and not only that plants are derived from simple cells, but also all the most highly organized animal tissues.

This little cell, which we have called a plant, we prove to be such, by showing it to be composed of the same constituents as are known plants.

We have almost forgotten to introduce our little friend by its proper name. It is a *Torula*. Placing the slide again under the microscope, we see some of them lying alone, while others are grouped into various forms. We measure them and find that they range in diameter from $\frac{1}{7000}$ to $\frac{1}{2500}$ of an inch, with an average of near $\frac{1}{3000}$, or about the size of the red blood corpuscles. Can we conceive of this size? 3,000 of these torulæ placed in a row would measure a distance of but *one inch*, and 27,000,000,000 of them would go into a cubic inch of space. Looking again, carefully, we see that the torulæ are round; none are square, none are flat, none are much elongated, for placing a little water upon the slide and making them swim and tumble about, they *roll* like balls, and not as irregular bodies.

We may, by careful attention, perceive that our little plant is not structureless, for a thin walled sack is seen enclosing a mass of semi-fluid matter; sometimes within this mass is seen a clear space, called a *vacuole*. Can we be certain that a sac is present? Let us apply pressure If it is done skillfully the sac will burst and the liquid matter run out. Again, let us place upon the slide a little *magenta*. Now, observe that it colors the interior of the cell, and leaves the sac clear, hence we infer that there are two structures and that the sac is different from the interior in composition.

Chemists have analyzed this sac and find that it is composed of *cellulose*, or the same constituents as wood fibres. Cellulose is composed of the elements carbon, hydrogen and oxygen, ($C_{18}H_{30}O_{15}$), the oxygen and hydrogen being in the proportion to form water, that is, two atoms of hydrogen to one atom of oxygen. H_2O being the formula for water.

The semi-fluid matter within the sac is called *Protoplasm*, or by Dr. Beale, *Bioplasm*. Protoplasm means the first form or shape, from *protos* first; the matter from which all life is evolved, the first form of life, the foundation of all life. Bioplasm, from *bios*, life, seems the more desirable term, and is becoming more generally used.

The chemical composition of bioplasm is more complex than of cellulose. In it have been found: Protein compounds, fat, mineral salts, and water. Protein is composed of oxygen, hydrogen, carbon and nitrogen, with a little sulphur and phosphorus, though by many sulphur is not considered a normal constituent. Bioplasm differs from cellulose in containing nitrogen, and it has no starch. The clear space, or vacuole, seen in the centre of the torula is in general considered a place where the bioplasm is very clear and transparent, hence as we look through, there seems to be nothing there.

By some unknown process the torula manufactures the protein and grows. To enable it to do this, it must be placed in some fluid containing the necessary elements. The plasma in which it flourishes best is that of pasteur, composed of water, sugar, ammonia, and some other less important substances. The temperature most favorable is 30° C, but it will live through a range from 60° C to 0° C, heat and cold both proving fatal.

This making of protein belongs entirely to plants; animals cannot do it; they must obtain their supply ready formed, either from plants or from other animals; while here this little, almost structureless torula can produce this wonderful compound.

How does the torula grow? By absorbing the plasma, changing it into protein and then assimilating that protein, or "formative material." Hence the operations are distinctly three, absorption, organization and assimilation, the power to do which resides in the mysterious vitality of the torula. The torula grows by *intussusception* (laying hold of inwardly), that is, the formative material is taken up within the plant or animal. Minerals, on the contrary, grow by *accretion*, or by additions from without. The former mode of growth is always characteristic of *living* bodies, the latter of *inorganic*.

Reproduction in the torulæ is an interesting process. It is principally by *budding*. It can very nicely be observed under the microscope, if only we have a little patience. Place a few torulæ, the fewer the better, upon a glass slide, add a little sweetened water, and bring them under the microscope. Now, carefully watch them. Probably upon one you may see a little *bud* or knob; watch, it grows larger and larger, but often very slowly; look again, it is now almost as large as the *mother cell*. Now observe, a stricture is forming between the two; now it is free. Thus the process goes on, slower or more rapidly, as the conditions are favorable

or otherwise. No sooner is the young cell liberated than it begins to bud, and thus in a short time is produced a immense number of torulæ, all like the original mother cell, all free and independent.

Sometimes the torulæ multiply in another way; within the mother cells are formed a number of little torulæ, these growing soon burst the walls of the parent sac and thus set themselves at liberty. It is this rapid growth of the torulæ which causes doughs and pastes to "rise," and become light and spongy, and this is one great practical value of our little friend.

The torula changes the compounds in which it lives; it absorbs oxygen and gives off carbonic acid. In this respect it exactly resembles animals and not plants, for the latter absorb carbonic acid and give off oxygen. Light is not essential to the growth of the torula. *Fermentation is the result of the vitality of the torula*, but in what manner is hardly known. The products of fermentation are:

Alcohol, Carbonic Acid,	·95
Glycerine, Succinic Acid,	·04
	·99

Thus, from a plasma containing one hundred (100) parts before fermentation, we can account for but 99 after the operation; there can be nothing lost, but what the other product is, is at present a mystery.

The bubbles seen rising during the fermentation of a liquid result from the escaping of the liberated carbonic acid, and from the torulæ rising to the surface of the plasma.

Fermentation cannot take place unless torulæ are first introduced into a liquid. But you say this is contrary to your experience, for you have known fluids to ferment without your introducing any torulæ. That may be so, yet for all that the torulæ have in some way gotten in. They can move about in many ways. They may become dry and be blown great distances, and being so small are invisible, or they may become attached to animals, birds or clothing, and thus be transported far and wide. We believe the air at all times contains larger or smaller numbers of dry torulæ ready to fall into a suitable plasma. Torulæ are ubiquitous.

Take your sweetened water, boil it, then cork it with cotton, or cover an ordinary cork with cotton. Now, if you have done this with care and no torulæ have been introduced, then it will *never* ferment. But the introduction of a single torula is sufficient to set the whole mass in motion.

There are two theories to account for the process of fermentation.

1. The torulæ *feeding* upon *one* constituent of the substance breaks up the existing chemical union and the remaining elements form new compounds.

2. The vitality of the torulæ causes the decomposition of the constituents, just as the heat of one's hand may cause the chemical decomposition of some substances, and the vitality of the torulæ produces heat; whereever oxidation progresses there is heat; life begets heat; heat is a mode of motion.

To this latter theory hold most distinguished modern scientists almost without exception.

Whence came the *original* torula? This question admits of but two answers; either it was evolved from some *lower form*, or it was a special creation. That they are at present spontaneously produced, we do not believe; that they could have come from lower forms is also hard to understand, since they are so simple themselves. Hence their origin we cannot know. Of the spontaneous production of germs we seem to have evidence in the appearance of the original germs of small-pox, syphilis, and of other diseases, but of this we may treat at another time. For the present we can only say that spontaneous generation is far from proven.

It should be remembered that torulæ grow in the dark as well as in the light; this is characteristic of a group of plants called *fungi*. Mushrooms and toadstools are fungi, as are also puff-balls. Our little torula then is a fungus. All fungi are made of very simple combinations of single cells, as is revealed by the microscope.

We have now learned that the torula *lives*, *grows*, is a *plant*, and a *fungus*.

If a high power of the microscope is employed, say 500 diameters, in examining the yeast, very small rod-like bodies may be seen among the torulæ; they may not be numerous, but some are always present. They measure about $\frac{1}{10000}$ of an inch in breadth, and are probably fifty or sixty times as long. These bodies are segmented by divisions running transversely, and look not unlike striped muscular fibre.

These bodies are called *bacteria*, from a word meaning "a rod." Being found associated with torulæ they are supposed to be related, and each segment may be considered as a single torula, united to its neighbors.

Magenta colors the central part, leaving

the sac colorless. There are several varieties of the bacterium, and all are remarkable for their continual and peculiar motions. The *Spirœolæ* move like a cork-screw. The *Vibrions* have a wave motion and look much like serpents. The *Oscillariæ* often have a very rapid motion around a fixed point, like an oscillating top. They ceaselessly move.

These organisms are always present in immense numbers in water which contains any decomposing animal or vegetable tissues. For purposes of study we obtain them from an infusion of hay or other similar substance. After a few days a thick scum arises upon the top of the infusion; if this is examined it is found to consist of countless masses of bacteria. Whence came these organisms? We must suppose that the germs existed in the hay, and that suitable surroundings caused them to grow, for if the infusions be boiled a long time and finally hermetically sealed while boiling, no bacteria will appear, even if they be kept for years.

It is supposed that bacteria perform a similar office in putrefaction to that performed by torulæ in fermentation, and that putrefaction is dependent upon their vitality. Reproduction in the bacteria is by segmentation; that is, within an individual segment, a number of young bacteria appear, grow and burst the mother segment, and start upon an independent career. Bacteria are so very small that they are studied with great difficulty, and yet are of much interest.

The following literature upon this subject may be of interest to the reader: "General Biology," by Thos. C. MacGinley; Biology for Young Beginners," by Stevenson; and "On Yeast," by Huxley.

TWO WAYS OF TEACHING AT HOME.

ONE of the most perplexing hours of the day to the mother is when the children come to be "helped with their lessons." It is useless for her to acknowledge that she has not kept pace with her geography and history, and has forgotten her grammar and arithmetic. She knows that she ought to have kept pace with them; that now and here the mother's duty calls her to work, and not to matters of frills, petticoats, or new hats. It is just as useless, too, for her to count the sums paid for the children's schooling, and declare that, after all, she is their teacher. There is no doubting that fact. As long as we pay to our teachers lower wages than to our skilled cooks and seamstresses, we cannot greatly blame them if they cram the children's heads with chaff of words and leave us to give them the ideas. Then, as we often have their work to do, how are we to do it?

There are two ways. Little Mrs. B., a veritable descendant of Gradgrind, drills the children every night in their next day's lessons. She keeps them at work until they can repeat *verbatim* Latin and definitions and Bible texts. She will not bate a jot, neither irregular inflection nor river in Africa. Their eyes ache, and their heads bob, and so do hers; but she holds them down to it as she would a knife to a grindstone. Phil, who is a dull fellow in ordinary matters, rattles off the words as if they were marbles dropping out of the mill; but that sharp little Bob is at the foot of his class. The words pass through his head like water through a sieve; he declares there is no sense in them. Mrs. B. prognosticates a miserable failure in life for Bob; he is the black sheep of the B— family and of the school. Whereas, the boy is simply lacking in the lowest kind of memory.

His cousins, the Dodd boys, do not rank very much above him. Their mother holds them back; will not let them be "promoted" or dragged through at high-pressure speed from class to class. "Fair and softly!" she says to the principal. "Let us lay the foundations first." The principal thinks Mrs. Dodd a nuisance. Meanwhile, in the evening she "keeps shop" with the boys, or market, or bank, provides them with quantities of home-made money, makes them buy, sell, make change, compute accounts, reckon interest, draw checks. She does not call it play; they know it is work; you never can hide a pill by sugar from a boy. But it is pleasanter than meaningless rules. And by-and-by the signification of the thing flashes on them, the reality, precision, inflexibility of figures, and the modes of handling them.

When they are studying their geography, their mother is usually reminded of some odd incident or story which happened in the country to which the lesson relates. It is a very live story; the people wear their native costume; they are busied with their peculiar work. You see the scenery, buildings, feel the climate, as she talks; the boys are with the Tartar on his plain, the lazzaroni in Naples, the "Polaris" drifting over the Arctic Sea. Perhaps they quite fail in naming the peaks of the Andes next day, or the capes on the Pacific coast, but they know a

new country, it is not a patch of yellow on the map; they have talked with the people there, and they feel that the winds blowing on their faces come from it.

Mrs. Dodd contrived a queer occupation for the boys when they began English history. For Joe, who has a passion for drawing and daubing in paints, she provided a mammoth blank book, each enormous page labeled a century. On these Joe drew figures, giving his idea of the people, houses and state of civilization in that century. You may be sure that Druids and oaks; Boadicea, with her spear and yellow hair; wolves, Alfred and his burned cakes, filled up the first pages with magnificient blotches of color. We confess that his zeal slackened as he came down to civilized times; there were but two or three figures in a century, but their histories were as fixed in his head by his mother's repetition as those of Cinderella, or the great Jack himself. For Will, who had an odd skill in costume and dramatic effect, Mrs. Dodd contrived paper boxes, with the name of the century in great gilt letters. There, by the help of little figures, the Black Prince played his part, and Richard was "himself again." This plan, with Mrs. Dodd's other plans, may seem trivial to our readers, as they did to the teacher. "Your facts are nails," she used to say, "iron nails, I only silver them over and drive them in."—*Scribner's Monthly.*

MAN ANTICIPATED IN NATURE.

ALEXANDER WINCHELL.

LET the reader imagine that the history of the world had been a scene of never-ending quiet. Suppose a fear of inflicting animal suffering had laid its hand on the volcano and the earthquake; suppose the rocks had not been plowed up, and the deep sub-soil of the earth's crust laid over in mountain ridges. I do not ask whether, in the midst of scenes of such monotony, the occasion could ever have arrived for the deposition of the coal. We will assume that it would. I do not ask whether, without eruptions and terrestrial distresses, the precious and useful metals would ever have been reduced from their ores; we may assume that they would. But where would lie our coal? Buried ten thousand feet from view, man would never have learned its existence; much less would he have known how to raise it to the surface. See the provision of Nature in breaking up the coal-bearing strata and tilting them on the edge, as much as to say, "Lo! here is your desire; search not it vain; dig, and be satisfied with warmth; drive forth the hidden energy of the abundant water, and bid the servants furnished to your hands execute all the behests of your convenience." Had chance formed the beds of coal under such a concurrence of auspicious and beneficent conditions, chance would not have brought it to our doors; chance would not have rescued it from burial beneath the sediments of a thousand following ages; chance would not have laid by in the same beds the ores of iron which the coal is fitted to reduce; chance would not have stored in the same relation the beds of limestone, to be used as a flux in the reduction of the iron ores by means of the mineral coal. See what provident Nature has done with other metals! Was it accident that enriched the upper peninsula of Michigan with her wealth of native copper? Or has there been in existence upon our earth any other being than man to whom these riches possessed the least utility or interest? The ores of copper lie buried a mile beneath the sandstones of the "Pictured Rocks." The sediments of unknown cycles of years were gathered upon the beds of valuable ores. At length, while the earth was preparing for man, a fiery outburst threw the deep-buried treasures to the surface. It did more. It reduced their refractory ores for the hand of man, and enabled him to gather directly the native metal. Still more! The same fiery outburst bent the flinty rocks into the form of a huge trough, and heaven sent down water to fill it and float the steam-sped vessel to the copper-bearing shore. And lastly, lest the manhood of our race should have been spent before the discovery of the treasure, all-provident Nature broke up samples of cupriferous rock, and strewed them along the shore and along the river courses, so that, when man should find them, he might trace the trail, as by a clew, to the original storehouse of the native metal. And all these preparations and provisions and utilities have no relations to any other terrestrial denizen than man.

Nature has mined for us in gold. Deep in the rocky recesses of the earth lay the precious metal. It must be brought to the light of day. But nature does not do this till the work of sowing sediments—the seeds of rocky growth—has been completed over all the areas destined to be inhabited by man. Had the deep-treasured gold been brought

up in the Mesozoic ages, the inundations and vicissitudes of later times would have scattered it over the breadth of the land and sea before our race had made its advent. No such false step was taken. It is only after the Tertiary beds have all been deposited that Nature throws up innumerable veins of quartz, which bring along with them the glittering gold. This is well; but Nature possessed a quartz-crushing machine in the shape of a glacier a mile in thickness, and some hundreds, if not thousands, of mile sin horizontal extent, and this she drew over the projecting veins of auriferous quartz and ground them to powder. These, at least, are the general views put forward by Sir Roderick Murchison in regard to the principal gold regions of the world. The California geologists, however, aver that the great ice-plow never scored the ribs of the Sierra Nevadas. Nature may have pulverized the gold-quartz of our western states and territories by some other agency. Nevertheless, it has been crushed and comminuted on a stupendous scale. When this work was done, by whatever means, she brought her gold-washing machine into requisition, and "jigged" the golden sands until the yellow particles were well assorted, and then strewed them along the narrow ravines to await the attention of the coming man.

But we need not go to the golden sands of the Sacramento to read the anticipations of man in the arrangements of Nature. What is every well and spring but a subterranean stream that has been beguiled to light by the out-cropping of the impervious floor over which it had flowed? We need not attempt to imagine what would have resulted were the rocks left to rest in horizontal and continuous layers, but it is worth while to recognize the beneficence of that vast accumulation of loose materials which we call drift. It is, as it were, an enormous sponge, which drinks in the showers of heaven, and stores them away beyond the reach of defilement and putrification in the deep, cool reservoirs of the filtering sand-beds, so that it is almost impossible to penetrate the drift to a depth sufficient to secure an agreeable coolness without obtaining a plentiful supply of well-strained water. So common and so vital a comfort has been secured by the geologically extraordinary deposition of such masses of loose materials over the surfaces of the naked rocks, and not less by their distribution in beds of sand and clay presenting every possible irregularity of thickness, extent, and disposition.

These and multitudes of other arrangements, collocations, structures, and products of a useful and beneficent character, are so many indications that during the long process of the world's fitting up—while yet the human era was contemplated as we contemplate the millennium—man, the nature of man, and the wants of man, constituted at least one of the objective points of cycles of geological preparation.

Finally, it is eminently worthy of remark that Nature has not only anticipated the coming of man, but has contemplated the exercise of human intelligence. How few of the benefits which nature affords have been reached without study and thought! None will affirm that matter was endowed with all its capabilities of benefit to the human race without any design that those benefits should be secured and enjoyed. This is tantamount to saying that the provisions of Nature prophesy a reasoning mind. We may venture to go much farther than this, and assert that the material of thought which Nature furnishes is correlated to the thinking principle in man. When the Creator adopted an intelligent method in the ordinations of the material world, it was equivalent to a declaration of purpose to introduce an intelligent being. And when the Creator had stocked the world with the materials of thought, and had planted in it a being capable of understanding Nature, it was the obvious purpose of the Deity that Nature should be investigated, and that, by such investigations, man should become not only wiser, but more reverent, more religious, and more happy.

From "Sketches of Creation."

A JOURNEY TO GRAMMARLAND.*

THERE was once a little boy who had a great desire to please his mother, and she was very anxious for him to learn grammar. To accomplish this they worked together with all their zeal; but it was very hard. To learn to speak requires much time; but one accomplishes it, and with pleasure too. When we say "ossee" to the baby, showing him a horse, and he repeats it, everybody is delighted; his mother rewards him with a look and a smile full of tenderness; his father embraces, with a shout of joy, his fat and laughing form; and the lit-

* "Grammar according to the Macean System; or, a Journey to Grammarland." Adapted from the French, by Père et Fille.

tle fellow vigorously brandishes his arms and his legs, to show that he is happy too.

That is not the way with the grammarians. Those poor gentlemen never laugh, and they have, alas! something more important to do than to kiss little children. With them it is no longer "ossee;" but we are in the presence of "horse, a common substantive, third person, masculine gender, singular number, forming its plural by addings, and whoever can't learn that is a little dunce!"

It is clear that there is no fun in that.

One beautiful summer morning the mother and the little boy had risen very early to review carefully the page of grammar which he must recite that day. The sun, which made the dew-drops on the grass glisten like diamonds, had entered the room through a corner of the window, and seemed to invite them to come and see how beautiful it was out-of-doors. The red-breasts, the tomtits, and the linnets called them with sweet songs from all the trees of the garden; and the large rosebush which grew behind the house, agitated by the morning breeze, struck the window-panes with its bunches of flowers.

Obedient as he was, the dear child had not courage enough to resist this universal invitation. His legs, which moved about in spite of him, asked to carry him into the garden, and his bright eyes could not do otherwise than to quit the books sometimes to play with the sun amid the flowers. The mother herself stifled a sigh, and it evidently cost her a great effort to keep the poor little boy in the room, when everything called him into the open air. But she could not think of yielding to such a weakness, for the master would soon be there; and when he had put on his spectacles, and assumed his imposing air, he was not a personage to be disregarded.

"Mother," said the child, all at once, "please explain this phrase; I do not know what it means, and I am afraid I will never learn it."

He was studying the modifications of verbs, and this is the sentence which he had to commit to memory: "*Number is the form which the verb takes to express its relation with unity or plurality.*"

His mother took the book into her hands and her eyes remained fixed with fright upon the phrase.

"Ah!" said she to herself, "I thought I used to understand the meaning of number in verbs; but now it seems to me I do not know anything about it."

She remained immovable, her mind plunged into a profound abyss, while her little son continued to interrogate her with his looks, with that simple confidence of children who think nothing too difficult for mother.

Just at that moment the door opened very softly, and an old friend of the house entered without knocking. He was a round, little man, with a merry, fat face, still fresh under his white hair, and with lively, blue eyes, filled at the same time with mischief and with goodness. Many tales are told about him. Often he disappeared for whole months, nobody knew where; then he suddenly reappeared, and no one dared to ask him where he had been. But it was rumored about that he was a sorcerer, and that he had at his command a magic chariot in which he could fly to countries that no one had ever seen. The little boy loved him very much, because there was no one like him to amuse children; and the mother was delighted every time she saw him, because he often aided her in her difficult task of instructing the little boy.

As soon as she saw him, she held out the book without saying a word, indicating with her finger the phrase which she found so difficult to understand. The little man had hardly looked at it, when he frowned and anger flashed from his eyes. He loved children so much that he became very angry when any one wronged them, and in those moments of rage he sometimes went so far that he actually became funny.

"Who wrote that?" cried he, pushing the book from him, as if it were something odious. "I don't know what keeps me from going right through the window to twist his neck!"

The good old man, in his exasperation, had let out his secret.

He appeared to reflect a few moments.

"Listen," said he, at last; "since anger has made me boast of what I can do, I will place at your disposal the power of which I, like a goose, have spoken. I have just returned from a journey which has fatigued me much, and it will cost me not a little to be off again so soon; but it shall not be said that I have left you any longer at the mercy of barbarians. Come with me. I will conduct you to Grammarland. It is a country where little children can amuse themselves as well as elsewhere, when they enter it in the right way."

So saying, he waved his hand. The window opened of its own accord, and the branches of the rosebush parted to let pass a chariot of mother-of-pearl, drawn by two

large swans, white as snow. The little man lightly jumped into it; and, having invited the mother and little boy to a seat by his side, he set out with them through the air.

"My dear child," said he, when they had lost sight of the earth, "what we wish to teach you when we place a grammar in your hands is much more important than you now think, and I charge you to open well your eyes and ears when we arrive in Grammarland.

"When you came into the world you could utter only groans and confused cries, similar to those of animals. Those who are born deaf remain so all their lives. It is impossible to teach them to talk, because the words which we pronounce before them can not enter their ears; and, for want of exercise, their mouths are able to produce only a sort of groaning or muttering.

"You know how to speak already, thanks to your mother, but you are still too young to understand what an immense service she has rendered you, and how much time and labor were spent by the first men in their efforts to transform into articulate language the coarse sounds which formerly came from their lips.

"Don't ask me any questions; your eyes have said enough, and I know that I must explain the word articulate. In order to do so to your satisfaction, I must give you a short lesson in natural history.

"Touch with your finger that little ball which you have in the middle of the neck, and which is called Adam's apple—why, I know not though. Have you found it? Well, keep your finger on it.

"Now, open your mouth, wide, and drive the air from your chest with the least possible noise. What do you feel under your finger? Any movement?"

"Very little."

"Try again, with your mouth wide open, and imitate the cry of a baby. Don't you feel the little ball tremble under your finger this time?

"It is in that place that the sound of the voice is produced, thanks to two membranes placed in the interior of Adam's-apple, between which the air which comes from the chest passes, and which are tight or loose, according as we wish to make much noise or none at all. A chord tightly stretched gives forth a sound when struck, but none when it is loose. That is precisely the case with the membranes of Adam's apple. They are called the vocal chords, one of the prettiest names ever invented by those whose business it is to designate the innumerable parts of which our bodies are composed.

"The vocal chords exist also in animals, which, like us, have lungs, and a windpipe through which the air comes and goes. They have a voice as well as we; but it used by them only to utter cries, because the noise goes from their mouths through nearly the same channel for each of them.

"Man has learned to break and bend his voice at the moment when the sound passes into his mouth, by disposing his lips, tongue, and teeth in a thousand ways, so that it is modified and transformed into a series of sounds very distinct from each other. Just now, when you had your mouth wide open, the sound which came from it was the same all the time, because it encountered nothing which would bend or modify it. It remained just as it was formed in the passage of the air through the vocal chords. Amuse yourself by pronouncing, very slowly, *do*, *re*, *mi*, *fa*, *si*, *la*; by paying attention you easily see that your lips dispose themselves differently to pronounce these different sounds. They do that of themselves, because they are accustomed to it, like well-trained horses that promptly go of their own accord to the place which they ought to occupy; but ask your mother how much care and patience their apprenticeship has cost her.

"That is, dear child, what is called articulate language. The name articulate is given to everything that can be bent, breaking itself, so to speak, into several parts, just like your fingers, for example, which divide themselves into three parts when you shut your hand. And now, if any one tells you, in your reading, to articulate your words well, I hope you will know what he means, and that you will take much care to profit by this great advantage which you have over animals.

"The advantage would not be so very great if it was only an affair of music, which is not so good as that of the little linnets in your mother's garden; but it enables us to clothe, in words easy to be known, the ideas within our heads, and to take them out to show them to others. This is of incalculable value.

"What is an idea? It is an image, or picture, in the rigorous sense of the word. That is what it signified among the Greeks, from whom it came to us.

"When you say mother, house, horse, those three words which you pronounce bring before the eyes of those who hear you three different pictures, which were drawn in your head at the moment when you spoke. It is

true that those pictures are sketched so rapidly that a thoughtless little boy may not see them; but by paying attention you will soon learn to recognize them. Two men that speak together are like two children who lend each other their pictures; for it is just that which we do when we exchange our ideas, as we say.

"All our images are not of the same nature as those of which I have spoken. Those are sensible and material ideas—ideas or pictures of material objects, or things that we can see or handle, as a house, a horse. You are more fortunate than many others, dear child; you do not want for any thing. I am sure, however, that you are sometimes made to wait for your breakfast or dinner, and in those moments you have a great desire to eat. If I pronounce before you the little word hunger, which has made many unfortunate ones tremble, it will awaken in you the remembrance of what you then experienced. Hunger is not a thing whose picture we can draw, and yet this word conveys to you an idea or description of the state in which you find yourself every time you are made to wait for dinner.

"I will not undertake to explain to you now all the kinds of ideas that we express by words; we will come to that when we engage in the special study of words. It is enough for you to know that a word could not exist if it had not been created expressly to represent some idea, and that should teach you never to employ a word that does not convey some idea to you.

"But man was not satisfied with finding words with which to clothe his ideas. He studied how to catch and tame, so to speak, those words which flew away into the air as soon as spoken, and how to make them visible so as to preserve some trace of the ideas which he could not retain in his memory, and so as to converse with those who might be out of the reach of his voice.

"That means was writing, an invention almost as wonderful as that of speech; and the little boys who grumble when learning to write their letters do not know how much gratitude they owe the men of genius who invented those marvelous signs, whose combination represents to our eyes the ideas that their combined sounds represent to our ears.

"The alphabet has the appearance of something of very little importance. To make curves and straight lines, oh! how tiresome! Well, those curves and straight lines are the most powerful instruments which human intelligence has yet given us. By their aid, the labors of all men, in all ages and regions, may be kept for each one of us, and the labor of each one may be a benefit to all. If any one should write what I am saying at this moment, the little boys on the other side of the world might profit by it, provided it should please their mothers. What are our greatest writers compared to the creators of the alphabet? The former are the tiles of the roof; the latter, the stones upon which the house is founded. The first shine in the sun and live in the air, while the others lie buried in obscurity; yet it is the latter that carry all.

"Once in possession of speech and writing, man can clearly explain his ideas. He makes for himself rules, groups into distinct families the words scattered in his memory, studies the art of speaking and writing, and the reign of grammar commences—not to make little children despair, as you have imagined, but to ennoble and fortify them, by teaching them to make themselves master of their ideas in order to express them well.

"You ought to understand now, my little friend, that grammar is an important science, one which has cost so much trouble to create; and the children of to-day ought to think themselves very fortunate to find it ready made for them when they come into the world. Instead of becoming impatient over the difficulties which they encounter, they ought to think of the much greater ones which those who made the grammar, met and conquered, and they ought to thank them with all their heart, and try to profit by their works.

"Speech is one of the principal things that distinguish men from brutes, and it is also by language, much more than by birth and fortune, that men are distinguished from each other. Whether you are poor or rich will make little difference with a well-educated man. It is by hearing you speak that he determines whether you are in his circle or not. If you wish to count for somebody in this world, it is necessary to prepare yourself now, by forming good habits of language; and the best way to form them is to go bravely to the rules which teach them, however dry and uninteresting they may appear to be.

"That is not all. In taking advantage, for your instruction, of the work and painful labors of the first men, you ought to think that there are many children who have not the good fortune, like you, of tiring themselves over grammar, and who will never know what you are learning. Grammar is as important to them as it is to you. This great

benefit of a regulated language is a common heritage left by our ancestors to their descendants, and it is not right that any one should be deprived of it. Think of this when you are grown, and try to remedy the injustice of lot or condition in life. Think of this even now, when you are inclined to feel jealous of the little boys who run in the street, while you are kept in the house studying your grammar. They ought to be jealous of you, for you have your part of the great inheritance, and they are losing theirs. Study your grammar with diligence, and try to invest it with a lively interest. It teaches the right use of language. It teaches us to speak and write correctly; to think and reason correctly. All success in the higher and nobler walks of life is largely dependent upon that knowledge which the study of grammar gives us. As it teaches purity of speech, it leads to purity of thought, of heart, of action, of life. Remember that

"'Words lead to things; a scale is more precise:
Coarse speech, bad grammar, drinking, gambling, vice.'

"He who is refined in speech is more apt to be refined in heart and in life than the man of coarse language. The study of grammar is, then, an important element in securing enlightenment, refinement, and purity of life."—*National Teachers' Monthly.*

JOHN BARTON'S BIRTHDAY.

A STORY FOR TEACHERS TO READ TO THEIR BOYS.

IT was a beautiful winter evening, and John Barton, a manly boy of seventeen, who was just beginning to feel for his first moustache, was in excellent spirits, for the morrow would be his birthday. Out of doors the bells were jingling merrily, for the sleighing had never been better; and on the next day, John and five of his schoolmates were going in a large sleigh to his Uncle Philip's, who lived six miles distant, on the banks of the Yohickon. They were going to spend the day in skating, have one of Aunt Mary's matchless dinners, a party in the evening, and a sleigh-ride home in the moonlight to finish up with. The anticipation of all this was too much for the boy's equanimity; and quite forgetful of the dignity appertaining to one of his years, he got down on the floor and had a merry game of romps with his dog Fido, to work off his surplus spirits.

But the next morning, when John awoke, there was an ominous patter of rain-drops against the window-pane, and when he looked out there was only slush in the roads in place of the sleighing of yesterday. The disappointment was more than he could stand, he felt cross, and even the handsome gold watch which he received for a birthday present did not restore his good humor.

After breakfast he went into the sitting-room, and stood looking out of the window and thrumming impatiently against the pane. The rain came down faster and faster, and his brow grew darker and darker, until, just when his ill-humor had worked itself up to the highest pitch, Fido came in brimful of fun and ready for another frolic; but Fido's good-humor only irritated John the more, and turning around quickly he gave the dog a kick which sent him to the other side of the room, at the same time swearing an angry oath. Scarcely had the words left his lips when a hand was laid gently on his shoulder, and a low voice said reproachfully:

"My son!"

John started, and a quick flush of shame dyed his cheeks as he turned to meet his mother's eye fixed on his. He loved his mother with a love that was almost worship, and had he known she was in the room, he would have held back, at all hazards, the words which had just passed his lips. His passion was all gone now, and he said regretfully:

"I didn't mean that you should hear that, mother."

"Did you mean that God should hear it, my son?" John's eye fell, and he made no answer. Then his mother asked: "Have you ever said such a thing as that before?"

John's answer was very low, but his mother heard it, and continued:

"More than once?" and again the boy said, "Yes."

"John," said his mother gravely, "have you forgotten the third commandment?" Then, without waiting for an answer to that question, she added: "Repeat it for me."

The boy hesitated for a moment, and then reluctantly repeated the words, "Thou shalt not take the name of the Lord thy God in vain;" and his mother added, "For the Lord will not hold him guiltless that taketh His name in vain."

"But, mother," said John, in something like his natural voice again, "I know all that, and I don't mean to say such things, but I can't help it; when I get downright angry I must out with it somehow or other."

"You can help it, my son, if you will; God never requires us to do what is impossible. The best way for you to help it is to learn to control yourself, and not get into a passion over what cannot be prevented. But if you do get angry, shut your mouth and keep it shut until you know what you are saying, and don't commit a sin against yourself and your God." So saying, his mother went away and left him to his own thoughts.

An hour afterwards John entered his mother's room with a resolute air, and sat down on a stool by her side.

"Mother," he asked, "did you ever know me to break my word?"

"No, John," she answered proudly, "I never did."

"If I were to promise you never to swear again, do you think I could keep my promise?"

Tears of joy came into his mother's eyes at these words, but she thought a moment before she replied:

"I think you had better not promise me quite that, because you do not know yet how strong the force of habit is; the wicked words might come before you knew it. I would rather you should promise me this—that, if you should forget, you will ask God to forgive you and to make you stronger for the next time.

"You are right, mother," replied the boy thoughtfully; "I know I can keep that promise, and I make it with all my heart." If he wanted any re-

ward he found it in his mother's approving smile, and the rainy birthday was not so utterly gloomy, after all.

Five years later John Barton was teaching a country school, and his boys loved him with all the enthusiasm that only a thoroughly manly man can inspire. It was winter; the ice on a neighboring mill-dam was strong enough to bear a thousand boys, and as smooth as glass; and on the morrow, after many urgent petitions, their teacher had promised to take all the school out skating. But alas! when to-morrow came the rain came too, and the boys all brought long faces to school with them. As they gathered about their teacher and poured their grumblings into his sympathizing ears, he smiled pleasantly and said:

"There, boys, don't growl at the weather. I grumbled at a rainy birthday once, but it turned out to be the best birthday I ever spent in my life."

"Tell us about it, please," exclaimed the boys, with eager curiosity.

They all gathered closer to him, and in his simple, straight-forward way he told them the story of his disappointment, his oath, his mother's words, and the promise which he afterwards made. In the silence which followed, one of the boys, a brave, quick-tempered lad, asked earnestly:

"Did you ever forget, Mr. Barton? Did you ever swear after that?"

"Only once, Phil; I got into a terrible passion with one of the school-boys, and the old habit was too much for me. That frightened me, and showed me how weak I was. I was on my guard after that, and soon a new habit took the place of the old one. Even yet, when I am very angry, my teeth grit together, and my mouth stays shut until I am master of myself again."

The boys said no more about their disappointment, and went to work with very thoughtful faces. Some of them soon forgot the story and its moral, but the little seed, dropped just at the right time, took root in more than one heart, and afterwards, when they grew to be men, some of those boys remembered John Barton, and thanked him that they had broken themselves of a habit which is as foolish as it is wicked.

EDITORIAL DEPARTMENT.

THE SCHOOL JOURNAL.

LANCASTER, MAY, 1876.

J. P. WICKERSHAM. . . . . J. P. M'CASKEY.

OUR CENTENNIAL WORK.

WE cannot quite make good our promise of last month to tell our readers in this number of *The Journal* "that our Educational Building has been completed, and that the materials are all on hand with which to make the display," but it gives us pleasure to announce that the building is very nearly finished, and that there are already in it a large number of boxes and packages containing articles for exhibition. We have information also that other shipments have been made from different parts of the state; so that the work of fitting up can soon be commenced in earnest. In this the officers of the School Department will be aided by the voluntary assistance of a number of teachers, school officers, and friends of education.

Enough is known of the character of the materials prepared for exhibition to warrant the statement that the display will be creditable to the state. It will not be all it could have been made if preparation for it had been commenced at an earlier day, or if when commenced all the school authorities of the state and all teachers had entered upon the work with heartiness. But anxious inquirers are assured that the exhibition will be such as to satisfy all who have contributed to it, if it be not such as to make ashamed any who have stood coldly aloof, refusing aid to those engaged in organizing it. This is not the time for praise or blame; but the time will come when the generous and patriotic who have helped in this enterprise shall have full credit for what they have done, and when, too, those who have studied so well "how not to do" anything will stand self-condemned for their indifference to that which so intimately concerned the honor of the state.

It is now too late for further work. We must therefore go before the world with the materials already prepared. But contributions of money may still be made. No false estimate of the expense has been published. The exhibition was expected from the first to cost at least $20,000. If everything about it was to be paid for, it would cost double that sum. The Legislature gave $15,000, more than all of which will be required to pay for the building and the fittings. It was believed that the school boards would freely contribute the remaining five thousand dollars. Up to this time, April 24, they and a few public-spirited individuals have sent in about $3,000. It may not be too much to hope that the boards which have not yet given anything will make up the remaining $2,000. Unless this shall be done, we shall entertain

the opinion that their duty has not been fully discharged. But whether the money shall be contributed or not, the exhibition shall not suffer in anything essential to its success on that account. There are those interested in it in whose keeping the honor of Pennsylvania is as the "apple of their eye," and a plain and economical but tasteful presentation of her school interests shall be made at the Centennial, let it cost what it may.

The exhibition will open on the 10th of May. We expect to open our exhibition with the rest; and we take this occasion to give a cordial invitation to all, and especially to all interested in education, to visit the Pennsylvania Educational Hall and see what we have to show. The location of the building is a short distance northwest of the Art Gallery.

As soon as it can be prepared, probably in time for the next issue of *The Journal*, we propose to publish a full description of the display and a full list of the contributors and the articles contributed. If the way opens the whole may be arranged in the shape of a special catalogue.

THE next annual meeting of the Pennsylvania State Teachers' Association will convene at West Chester, on Tuesday, August 8th, for a three days' session. The programme will present some of the most important educational questions of the time, and the attendance of teachers and educators generally will, no doubt, be very large.

THE *Cornell Era*, while we heartily thank it for its good words, without doubt does Pennsylvania more than justice in the following:

Probably Pennsylvania will outdo all the other states in the completeness of its representation in the department of public schools, from the Kindergarten to the University. Pennsylvania probably does not excel Massachusetts in its system of common schools and it certainly is far behind several of the states in its colleges, but it is the vigor that is thrown into the work that is going to tell. The Legislature of Pennsylvania has appropriated fifteen thousand dollars for a separate building in which to exhibit her school system. The energy shown in collecting the material and the thought exhibited in its classification are the chief elements that have placed the state in the promising condition in which we see it.

THE meeting of the National Teachers' Association will be held this year in the City of Baltimore, commencing on Tuesday, July 11. We tried our best to have this body of educators assemble at Reading, in our own state, but our wishes were overruled. We learn that Baltimore will make extensive preparations for her expected guests, and the officers of the Association have, as we understand, arranged an interesting programme.

In connection with this meeting of the National Association there will be held an International Congress of educators. General Ministers of Public Instruction from abroad, and a number of distinguished teachers, are known to be preparing for a visit to this country during the present summer, and it is thought they can be induced to take part in the proposed congress. If so, it will prove the most interesting and important educational gathering ever held in America. Gen. Eaton, of the National Bureau of Education, has the arrangements for the congress in charge, and as soon as we are in possession of the necessary information we shall take pleasure in making them known to our readers. Pennsylvanians in large numbers will, of course, attend the Baltimore meeting; and it is not unlikely the congress may hold a session in our own hall on the Centennial grounds.

A CLEARFIELD paper says:

Some of the students of the Leonard Graded School, in this place, planted about thirty young maple trees in the grounds around the building on Saturday last. They propose to spend another day at it, and have about thirty more planted. In a few years the Leonard school will be an attractive place—ornamental as it is now useful. The scholars deserve considerable praise for the pains they have taken to ornament the grounds.

We cannot commend too highly the good taste and public spirit of the scholars above referred to. There is special propriety in this kind of tree planting during the present Centennial year. Realizing this the Secretary of the Connecticut Board of Education, some time ago, issued a circular to the teachers throughout that state, urging them to secure the planting of trees in the grounds connected with their schools. We would be glad to see this good work extended to Pennsylvania. These trees would be remembered as Centennial trees, and some of them would be standing in 1976, associated with the names of the boys and girls who planted them in 1876.

IN the Industrial section of the National Association, of which S. R. Thompson, Peru, Nebraska, is President, the following, in addition to other subjects, have been sug-

gested for discussion; and on some of them written papers are in course of preparation:

1. What studies may be properly classed as specially "related to Agriculture and the Mechanic Arts?"

2. Should any amount or kind of labor be required of students in industrial schools? If so, what kind and how much?

3. How many hours per day may an average student engage in manual labor without injury to his capability for hard study?

4. To what extent should industrial schools teach manual arts in connection with literary and scientific studies?

5. Should technical and literary education be imparted at the same stage of school life, or should the literary be first given and the technical superadded?

6. Should industrial education be provided for women as well as for men?

7. What is the legitimate work of a Professor of Agriculture?

8. To what extent should industrial schools engage in extending the limits of science and art by experiments or otherwise?

9. What can be done to secure a larger proportion of educated labor in our producing and manufacturing classes?

10. Are our public schools doing as much as they should to promote industrial education?

11. What may our normal schools do to promote industrial education, without at the same time going out of their legitimate province?

THE Indiana *School Journal*, in speaking of the exhibit that state proposes to make at the Centennial, concludes with the following paragraphs, which express not too strongly our own appreciation of the grand effects of the work done for the Centennial in this state. Exhibits of school work must in some way be kept up.

But whatever the relative merits of the exhibition may be, the educational advantages to the state will be ten-fold the entire cost. The educational standing of Indiana, as compared with other states, is a matter of not a little consequence, and this display will do much to put the Hoosier state well up in the educational scale, where its rapid improvement in the past ten years properly places it. But the chief benefit will come in the form of a higher standard of work. There are many teachers entirely satisfied with results that other teachers would be ashamed of. Teachers that never see any better results than they themselves secure, very naturally conclude that they are doing well, and are not apt to make much advancement. But show these same teachers something still better, and they will at once make an effort to attain the higher standard.

The work prepared and sent in to the committee is, of course, regarded as good by those sending, and yet there is a wonderful difference between the poorest and the best. If some teachers could be present and compare the work they have sent with other work done under the same circumstances by children in the same school grades, they would beg of the committee to allow them to withdraw their work, or at least to allow them to make another trial. Every school that has prepared work has gained strength by the effort made, and both teacher and pupil feel that they can do better at the Centennial. The hundreds and thousands of teachers that attend the Centennial and see the beautiful work done by the children, will return to their schools with higher ideals, and renewed purposes to achieve something better in the future than they have ever reached in the past. In this way will this Centennial educational exhibit be worth more than a hundred thousand dollars to Indiana.

THE following is an outline of the provisions of a bill now under consideration in the House of Representatives at Harrisburg. It may be characterized as a measure of *voluntary* compulsion.

Sec. 1. Makes it the duty of parents to send their children, between the ages of eight and fourteen, to school for twelve weeks each year.

Sec. 2. Forbids the employment by persons or corporations, of children between said ages, during the school hours of school days.

Sec. 3. Makes it the duty of school directors, twice a year, to see that no children are employed in mining or manufacturing establishments who have not been instructed twelve weeks.

Sec. 4. Requires parents to have their children instructed.

Sec. 5. Makes it the duty of directors to carry out the provisions of the law, and subjects parents who violate the same to a penalty of five dollars.

Sec. 6. Provides for supply of books for the indigent.

Sec. 7. Provides for truancy, relieving parents of responsibility for it.

Sec. 8. Allows boards of directors to make regulations for truancy, to be approved by the judge of the court.

Sec. 9. Confers jurisdiction in cases arising under the act, upon justices of the peace.

Sec. 10. Makes it obligatory on school directors to provide night schools for children who work during the day, when there are twenty such children.

Sec. 11. Leaves the adoption of the law optional with school boards.

FEW political truths have ever been expressed in language more terse and strong than the following, written in 1848, by John C. Calhoun:

The quantum of power on the part of the government, and of liberty of individuals, instead of being equal in all cases, must necessarily be very unequal among different people, according to their different conditions. For just in proportion as a people are ignorant, stupid, debased, corrupt, exposed to violence within and danger without, the power necessary for government to possess, in order to preserve society against anarchy and destruction, becomes greater and greater, and individual liberty less and less, unless the lowest condition is reached, when absolute and despotic power becomes necessary on the part of the government, and individual liberty becomes extinct. So, on the contrary, just as a people rise in the scale of intelligence, virtue and patriotism, and the more perfectly they become acquainted with the nature of government, the ends for which it was ordered, and how it ought to be administered, and the less the

tendency to violence and disorder from within and danger from abroad, the power necessary for government becomes less and less and individual liberty greater and greater.

An intelligent correspondent complains bitterly of the influence for evil sometimes exerted by politicians in the conventions of school directors called to elect county superintendents, and suggests, as a remedy, that "Boards of Directors be permitted to vote in their respective districts, record their votes for the candidate or candidates, and the next day send a return, by one or two of their number, to be combined and counted with returns from other districts." He thinks that county superintendents, as well as all other school officers, should be selected without regard to politics, and is very firmly convinced that the mode of electing superintendents which he suggests would be an important step towards securing this desirable end.

The custom of dubbing all teachers with the title of "professor" is not to our taste. In the West this custom is almost universal, and at a teachers' institute or association there, one will hear young men of eighteen or twenty years of age, without much knowledge in advance of their pupils, engaged in teaching their first school, called "professor." We have never heard the title applied to lady teachers, but this omission, we presume, is only a freak of the fashion, and another turn of the wheel will bring them to the front, and we shall have Professor Smith, Miss or Madam, as well as Professor Smith, Mister.

In Pennsylvania the custom of calling all teachers "professor" is growing, but it is not yet so general as in the West. We hope it will not become so. Teaching, as a whole, is not yet a learned profession. Nine-tenths of all the teachers in this state do not intend to make teaching a life-work; they are simply teaching now because for want of preparation, capital or opportunity, they have been unable to engage in a different kind of business. To give to this class of provisional schoolmasters the highest title known to the profession, is to belittle the whole body of teachers and the great work in which they are engaged.

The Germans apply the title of "professor" only to those who have made themselves eminent in some special branch of instruction, and whose claims have been recognized by some university or by the government. It is a title of honor sought for and won. No one can bear it without deserving it. Its recipient must be a scholar, an original investigator and a teacher.

This use of the title may be, however, too exclusive for American ideas. But let us at least confine the title to the higher grades of teachers, those who teach in our colleges and those who occupy the highest positions in connection with our common schools. No one ought to receive such an honor unless in addition to scholastic and professional qualifications he proposes to make teaching a life-work. Owing to the present social condition of the country, all teachers cannot be forced up to a high standard of qualifications. For many years to come, we must be satisfied with very moderate acquirements on the part of the great majority of them; but let us not seem to be satisfied with the mere apprentice work that is now done in so many of our schools, let us not fix the standard of admission to the profession at the low point where it is at present, by conferring the highest title known among teachers upon all persons indiscriminately who may chance to assume the duties of teacher.

One of the ablest advocates of compulsory education in England, Mr. Geo. Dixon, in a recent speech in parliament on "Compulsory Formation of School Boards" and "Compulsory Attendance at School," states some facts from which an opponent of his way of thinking on the subject under discussion might argue with some force that he did not draw the proper inference. Says Mr. Dixon:

> In many of the small towns and villages, I admit at once that the condition of education is better than in the average of the large towns. And why is that? Many honorable members on the opposite side, and on this side also, understand the reason perfectly well. Wherever there is a squire or a clergyman, or where there are several public-spirited individuals in a small town, who have the means to provide the necessary education, and are interested in the work, there education, according to our present standard, flourishes; and it is to the credit of many honorable gentlemen on both sides of the house, and to thousands of clergymen in this country, that the condition of these small towns and villages is what I have described it to be—better than the average in the large towns. But many honorable gentlemen make the mistake of thinking that all villages are like their own. The fact is, that although there may be thousands of villages in the condition I have referred to, there are thousands of others that are very backward indeed, and far below the average of our towns. The reason of that state of things is, that the clergyman and the squire are not able, or from absence they may be unwilling, to devote their means and their time to education. Wherever this is the case educa-

tion is backward, and it is on behalf of these backward districts mainly that we appeal to the House of Commons to pass a bill which shall enable compulsory attendance to be enforced by means of school boards! And, again, says Mr. Dixon, I will make one or two contrasts. In Dorsetshire and Wiltshire there are twelve small towns and villages, some of them purely rural, with an aggregate population of 11,454. Here the education of the children has been well cared for, and the average attendance is one in six of the population. That is a very large attendance, and we shall be a long time before we reach it in the towns. In the immediate neighborhood of these twelve towns and villages there are twenty-seven parishes, with an aggregate population of 20,570, where the average attendance is only one in fifteen. Now, why is there this contrast? Simply because these twenty-seven unfortunate parishes are not blessed with the happy accident of an able and suitable squire or clergyman, or other similar public-spirited individuals.

Mr. Dixon's speech contains additional facts of the same kind. Indeed, his whole argument in favor of the compulsory law rests upon the supposition that such a law would bring the children of the backward districts into school; or, in other words, that it would accomplish the same object in these districts that public-spirited citizens have accomplished for other districts not more favorably situated. Now, should it not have occured to Mr. Dixon that, as like causes produce like effects, it might be the best thing to do in the way of overcoming the evil he so clearly points out, to take measures to awaken a better public sentiment respecting education in the backward districts, or to enlist public-spirited citizens in the good cause? A few live teachers, or wide-awake superintendents, sent into these districts, would probably do more and cost less than the mechanical enforcement of a compulsory law. At any rate it would seem wiser first to try the agencies that have done so much for the twelve small towns and villages of Dorsetshire and Wiltshire, and thousands of others, before jumping to the conclusion that another and quite different agency is needed. The speech of Mr. Dixon was delivered in the English Parliament; the arguments for compulsion in America are not always much more weighty.

SUPERINTENDENT LUCKEY, in his late report of the public schools of Pittsburgh, has the following remarks on topics of general interest:

Drawing.—Drawing has at last taken its place among the regular school studies, and the results as seen in every department of our schools, from the primary to the advanced department of the high school, have exceeded the most sanguine expectations of the warmest friends of the measure. A knowledge of drawing is the foundation of all industrial art, and hence, in importance, it stands almost at the head of the list of common school studies, reading and writing alone preceding it. I cannot enforce this view better than by quoting the following paragraph from a letter written by Prof. Ball, of the Sheffield Scientific School at Yale College. He says, "Why is it that a majority of our apprentices are of foreign parentage? Why is it that American boys are growing too proud to learn a trade? Is not the cause found in the fact that our whole system of education has quite ignored an industrial life? The only legitimate result of our educational system will be the production of lawyers and doctors, or, at the least, clerks and school teachers. In consequence of this defect, children receive the impression that education has no bearing upon mechanics; that a trade is only manual drudgery. The result is that our boys select the most effeminate employments in preference to manly mechanical work.

"When our educational system provides our youth with some intelligent preparation for the prosecution of industrial labor, the trades will be filled by a more cultivated class of young men, and our boys will blush to be found selling pins and needles; but they will not be ashamed to be seen using the hammer and chisel.

"The whole nation is deploring the lack of good ornamental designers. 'We are becoming tired of sending so many millions to Europe for articles that we might produce cheaper at home if we had skilled designers."

Our common school course should be arranged so as to make more educated laborers and fewer professional men; to give us more skilled mechanics and fewer clerks; more workers and fewer idlers.

Evening Industrial Schools.—These schools have, from year to year, increased in numbers and efficiency, until they have become an important agency for the educ tion of our young men.

They would, however, be much more efficient if they were properly graded and some provision made for promoting the more advanced pupils into the central high school, where they would enjoy advantages which cannot be given to them without great expense in the district schools.

Schools of Observation.—Since the discontinuance of the training school we have adopted the plan of naming certain schools of observation, where the pupils of the normal school may visit and learn something of actual school-room work, and see practiced the best methods of teaching the several branches of school study. These schools serve a good purpose, but they do not fully take the place of a training school, since the visiting pupil can only observe, and is not permitted to teach, as in the training school, under the eye of a thorough teacher.

Institutes.—The attendance and interest of our teachers at institutes was never so great as during the past year. Five sessions are held each year; four quarterly meetings are held on the third Friday evening and succeeding Saturday forenoon of the months of October, January, March and May; and the annual meeting on the week preceding the opening of schools in September.

The evening sessions are held in different school buildings throughout the city, and the programme is arranged to make the exercises interesting and instructive to the general public, while the forenoon exercises relate exclusively to school room work.

WE INSERT below in full the brief but sensible address of Rev. Joseph King, President of the school board of Allegheny City. It is given as an introductory to the school report of that city.

To the Honorable, the Board of Education:

Gentlemen—We herewith respectfully submit to you, and through you to the public, our twenty-first annual report. It gives us pleasure to say that, according to the best of our knowledge, satisfactory progress has been made in the schools of the city during the past year. The teachers, generally, have been faithful and have endeavored to do their duty. The written examinations, conducted on the 8th of June by the Committee on School Inspection, were highly creditable.

The whole number of teachers employed in the Allegheny City school district is one hundred and eighty-six. Last year there was one hundred and seventy-four (174). In some of the wards the enrollment would justify the employment of more teachers, but there is a lack of room. The increase of population requires additional school accomodations.

The amount paid to teachers for the past year is $105,617.75. The grand total for educational purposes, including night schools, colored schools, contingent expenses, and the salaries of the Superintendent and music teachers, is $118,554.60—over eleven thousand dollars ($11,000) more than was paid the previous year. A comparison of statements made in reports of other cities shows that less money is expended for school purposes in Allegheny, than in most cities of the same population. No needless or extravagant outlay of means is made.

Two new and commodious buildings have been completed within the year, in the First and Second wards, and are now occupied.

It is said that self-preservation is the first law of nature. If this be true in regard to the individual, it is also equally true in regard to the state which is made up of individuals. And the most potent means, as all experience shows, of preserving the state, of preserving our liberties and American institutions, is the education of the people. Let education become universal, and thereby crime is not only diminished, but the sum of human happiness and enjoyment is greatly increased. The ignorant easily fall into vice and wrong-doing. It is not only the part of wisdom, but of *Economy*, to expend money for the purpose of giving the youth of our land a common school education; and it behooves us, prudently and discreetly, but firmly and boldly, to resist all efforts, by whomsoever made, to destroy our system of public schools. They are the bulwark of liberty, and to overthrow them would be to remove the foundations of American liberty and independence. *We must educate.* Let ignorance be regarded not only as a misfortune, but as a sin and a crime; and instead of permitting those who come from the monarchies of the old world to foreignize us, and turn backward the wheels of progress, let us Americanize them, and insist upon their accepting and coming under the influence of our Republican institutions; and let him who, by word or deed, seeks to break down the common school system of America, be counted as an enemy of our national life.

It is not the proper function of the common schools to teach religion in any of its distinctive forms, or denominational aspects. They are a secular institution, a governmental expedient. The state establishes and sustains them for her own protection and self-preservation. A certain amount of enlightenment and education is absolutely necessary for the secure maintenance of a republican form of government. This the government itself supplies, and because of their importance to her own existence and welfare. The state has a right to furnish schools for her children, at public expense, by reason of the importance of the schools to her own perpetuity and welfare. She must protect herself; schools are her best protection. We fear not for the stability, perpetuity and highest political and moral good of that state whose citizens are educated. Let our aim then ever be to improve the efficiency of our schools and to this end we recommend the appointment, yearly, of a standing committee of six, one of whom shall be the City Superintendent, to be called the Committee on Improvement and Reform, whose duty it shall be to inquire as to ways and means, whereby the prosperity and efficiency of the city schools may be promoted, and to report from time to time to the Board.

In conclusion, permit me, gentleman, to express to you my sincere and hearty thanks for the patience and kindness you have shown me during the past year, in endeavoring to discharge the duties of my office. Respectfully submitted,

JOSEPH KING, *President.*

THE BIBLE QUESTION AGAIN.

WE have received the following communication from a "Director." We publish it without comment except to remark that practically no invidious distinction need be created among the children in a school by allowing some of them to be dismissed a few minutes before the others in order to keep inviolate the rights of conscience. If these children were *forced* out for the purpose of extending a special privilege to those that remained, the case would be entirely different. But it should be remembered that the only plan advocated by *The School Journal* gives each child the choice of remaining in the room during the religious exercises or of quietly leaving the house and returning to his home. Both those who remain and those who leave have their wishes gratified; and, what is of much more consequence, they have their rights respected. But hear "A Director:"

In a late number of the *Penna. School Journal*, State Superintendent Wickersham, in speaking of the President's recommendation of an amendment to the constitution prohibiting the teaching in the public schools of religious, atheistic or pagan tenets, makes this remark: "We have solved this problem here in Pennsylvania in our own way."

I have been an attentive reader of *The School Journal*, and the only way he, or they, have attempted to remove the difficulty complained of without disturbing the conscience of the people, is to allow those not in sympathy with religious services to

quietly withdraw, and then the teacher and those remaining can have a little religious meeting.

Liberty of conscience is a very good thing if you don't have to purchase it at too dear a rate. In that case the pupils of the public schools, for not thinking or feeling as others do, must be turned out in the cold or rain and go home alone, or wait until their more religious schoolmates come out from their devotions. Such a policy is setting up a sectarian distinction that will work deplorable results.

The only ground of safety acceptable to all classes is to reject all sectarian, religious and theological distinctions. The Bible in the schools is attracting unusual attention from the secular press, the pulpit—in fact everywhere. Several eminent clergymen have lately declared their unequivocal objections to its being used as a book in the schools.

There is, however, a disposition to cling to the Bible as a non-sectarian book. Let that be as it may, the instant you put you finger on it and give it the touch of your mental magnetism it flashes into the most intolerant sectarianism. Hence, we are constantly reminded that, however essential the Bible is as a text-book in the schools, the teacher must avoid any explanation or remarks, lest the construction might kindle a bad feeling in the school and neighborhood, alike distasteful to pupils and parents. If that be the case, which but few are disposed to doubt, the schools would be better without it.

But if we must have the Bible in the schools, why not treat it as impartially as any other good book? Instead of the present unmeaning stultifying process of reading it without comment, or to have it to lie on the table as the Word of God, why not accept the book as you would any other book, and have it carefully read and submit every line and verse to thorough criticism without fear or favor? Its being a holy book need not be questioned. As the Word of God, it will not suffer depreciation by being thoroughly investigated.

A DIRECTOR.

SCHOOL GOVERNMENT.

THE following is a synopsis of an address recently delivered by W. W. Woodruff, of this state, before the Teachers' Normal Institute of the city of Wilmington, Delaware:

More teachers fail from want of ability to govern than from any want of scholarship, and it is more easy to increase our scholastic attainments than to acquire an ability to govern. One great object is to govern ourselves, to teach others to do the same, and put pupils on their feet so as to take care of and to control themselves. Much time is wasted in making scholars like soldiers. Military order is necessary for soldiers, but scholars do not go out into the world in platoons, nor appear in society as they appear in school. You may succeed in establishing order, but unless you have laid the foundations of a good character you have failed.

Teachers should have correct ideas of what government is, and should teach their pupils that there are laws, and illustrate the same by showing that there must be system. Coming to more specific requirements, teachers should obtain the confidence of their pupils. This can be done by showing that you have sympathy for them, and that you are honest and sincere. It is not necessary always to confess your fault to your pupils, but show that you are ready and willing to do so when it becomes necessary. Then you should come before your scholars and say you are sorry. This must not be done every day, as your hold upon the scholars would be weakened. A candid acknowledgment to your pupils, once in a while, will not weaken the respect and confidence of the pupil. One of the best recipes to secure the love and confidence of a scholar is to free our minds from all vanity and affectation.

The first rule in governing well is to have no rules at all. If you adhere to printed or written rules, you challenge your school to break those rules. But for the prohibition, the desire to transgress would not be created. It is necessary to have regulations, subject to modifications, but have few rules.

In the enforcement of order a great element to its success is to learn to wait. We are apt to feel that all resistance to government should be put down, but there is a rough and a smooth way of doing it. If strong enough physically, you can drive right through, but if you will wait and be persistent, you will accomplish the same result in a more pleasant manner. Charles Sumner, when he lectured in West Chester, fifteen years ago, stopped in the middle of a sentence while a man got up abruptly and walked down the aisle; when he had passed out Mr. Sumner resumed where he had left off, in the middle of the sentence. No one offered to move afterwards. He had conquered by silence and waiting.

Another point is to behave well yourselves. We all have some shortcomings, failures of some kind. Equality cannot be expected in good scholars. If you expect order, you must be orderly; if punctuality, you must be punctual; if study, you must study yourselves. Teachers who show indifference to study, or who merely study enough to get along, will never be successful. You must have a zeal and a love for the work, which will carry you beyond the requirements of the hour.

Teachers must show that they expect much from their pupils. They should seem as little as possible to govern, and let it be quiet—no command. If the wish is recognized, the will need not be expressed. Study the time to do so and but seldom find fault, and study the mood or mind before speaking of them. Teachers should govern more with the eye. They talk too much. Men control wild animals by looking them in the eye. Children can be controlled in the same way if there is behind it a kind, benevolent heart. Govern kindly by love—not a watery, sentimental kind, but a sincere, true love that wins. There are great depths of love in the heart that have never yet been reached. Govern with discrimination. No two pupils are alike. Some children are strangers to kindness. Parents may love them, but they never give expression to such love, and some only find when grown up that their parents ever loved them.

Scholars should be kept busy, and in order to keep them busy teachers should anticipate and prepare beforehand. Being hasty is a grievous fault. Some hastily take a position from which they are compelled to back down, and thereby lose their authority. Do not think that I disapprove of the use of the rod, for I do not, but try the full measure of love first, and get the parents to co-operate with you. You can gain the parents to your side by showing that you are sincere. This plan, if pursued with honest feelings instigated by love, can scarcely fail to win the pupil and avoid the disagreeable necessity of using corporal punishment.

HIGH SCHOOLS.

THE hard times are beginning to make the payment of taxes a burthen to the people; and naturally they are looking about in order, if possible, to find some way of lightening them. Taxes for the support of schools are generally paid more willingly than taxes for other purposes; but in some parts of the state even these taxes are complained of as unnecessarily heavy. High schools are the most costly part of our educational machinery, and their friends must not be surprised if they should be called upon to resist an attack that seems to threaten them, growing out of the cause above referred to. By some it is questioned whether high schools are a legitimate part of a public school system, and others give expression to the opinion that even if the law permits their establishment, it is impolitic to do so. As showing the strength of the enemy in the war that impends, and the ground occupied by him, we publish below a well-written editorial article from the Greensburg *Herald*, an influential newspaper of this state, edited by an ex-county superintendent. We hope some of our high school men will not allow the arguments presented to go unanswered.

As a Pennsylvanian we feel proud of our common school system. We believe such a system is absolutely necessary in order to the perpetuity of good government, and the peace and happiness of the people. This system has afforded the opportunity to the children of the poor to acquire such education as has enabled them to climb from obscurity, to places of honor, influence and power, and to contend successfully, for the highest positions in the government, with those born in luxury and enjoying the advantages of social position.

It is not necessary, in order to elucidate the point we intend to make in this article, to enumerate the reasons why every state should establish a system of common school instruction, free to all the children of her citizens. We simply state what we believe to be the common sentiment of at least four-fifths of our people, when we assert that *free schools are essential to a free government.* But now, while such is the fact, we wish to call attention to what we understand to be a system of common school education, and what we look upon as an abuse of the system.

Common schools are intended to afford to every child in the state the facility for acquiring a thorough knowledge in the different branches of an English education, such as are necessary in order to transact the ordinary business of life with accuracy and dispatch. It never was the intention of the people of this state to establish a common school system which would prepare all the children of the state for professional life.

Our common schools were not intended to supersede academies, seminaries, colleges, or universities. Those desiring to prepare themselves for professional life, as well as those who desire to engage in any particular department of the mechanic arts, should seek such preparation at institutions supported by funds raised from those who desire such special preparation.

And hence, we do not believe that all the people should be taxed to support what are known as high schools, nor any school in which the higher branches of mathematics and the dead languages are taught. Not that we would throw obstacles in the way of any, be they rich or poor, who may desire to obtain a thorough classical education. But our position is that common schools, supported by taxation on all the people, were not intended, nor should they be so conducted, as to take the places of the higher institutions of learning.

The public is interested in having every child in the community taught to read, to write, to make calculations accurately, to convey their thoughts clearly and correctly, and to understand our system of government thoroughly, and thus be qualified for the discharge of the duties appertaining to every-day life as citizens. But everything beyond that ought to be secured by each individual, by his or her own effort.

The public should not be taxed to pay for educating a man to practice medicine or law, nor even to preach the gospel. The people should not be taxed in order that some young men should acquire a practical knowledge of tannery, of carpentery, of painting or blacksmithing. And yet it is very necessary that at least a portion of our young men should learn these trades. It is very important that we have thoroughly trained, competent and well qualified teachers for our common schools; and yet the people should not be taxed to support our young men and our young women at our normal schools. We also object to the growing disposition, on the part of some teachers and school directors, to multiply branches beyond those required by the law in our common schools; thus crippling the efficiency and success of the teacher, by using the time which should be devoted to teaching the common branches in imparting instruction on branches which should be taught in academies and colleges supported by private funds.

One of the greatest evils at the present time, connected with our common schools, is the attempt to teach a little of almost everything, and very little of anything thoroughly. Our teachers have a smattering of Latin and Greek, and a slight knowledge of Algebra and Geometry, and yet many of them cannot write a half dozen sentences in the English language correctly, and some of them would be puzzled to spell "*barefoot*" correctly. Not long since, we received the proceedings of a township institute, prepared by a committee appointed for that purpose, in which it was set forth among other things, that three persons had sung a duet.

If communications, and the proceedings of township institutes, were published *verbatim et literatim*, as they are written and sent to the printer by some of our teachers, there would be a good deal of laughing at their orthography and grammar, by some who are looked upon as old fogies. The deficiency in some of the common branches arises from the attempt to teach too many branches in our common schools. We hope our educators and school directors will take such steps as will remedy the evils and errors referred to above. The stability and perpetuity of our common school system demand that these departures from the true and correct foundation upon which our common school system is based, should be arrested and corrected.

AN ENGLISH MAYOR ON AMERICAN FREE SCHOOLS.

ON the 16th of December, Sir Charles Reed lectured before the Birmingham Teachers' Association on Elementary Education in America. The Mayor (Alderman Chamberlain, in moving a vote of thanks to the chairman, said he hoped he might be permitted to join in the welcome which that meeting had given to the speaker of the evening. Nowhere should he be more heartily welcomed than in Birmingham—a town prominent, at all events, for the warm interest which it has taken in the education question. Of course, in some points of principle, and perhaps in many points of detail, some of them differed from the views expressed by Sir Charles Reed; yet they all admired his earnestness and conscientiousness in the work, and the ability he has displayed as chairman of the greatest of those remarkable educational authorities, called into existence by the Education Act of 1870. For his own part, he had marveled, considering the difficulties which prejudice and ignorance had thrown in the way of the London School Board since its establishment, to see the extraordinary results which, notwithstanding these difficulties, it had been able to accomplish.

He (the Mayor) had taken a particular interest in the comparison so frequently made between education in England and education in America; at the same time he did not desire that too much importance should attach to it. In all these comparisons they were apt to leave out of sight the fact that no two nations stand upon an identical footing, and they had to see circumstacens the same before they could apply the same rules in all cases. Making that allowance, however, there are some very valuable information and some very admirable suggestions to be obtained from a study of American educational institutions. In respects, it seemed to him, they are still very far ahead of us. He hoped the gentleman was not too sanguine in anticipating that we should soon overtake them; but in two points, at all events, he saw no chance of our doing this. The first was the interest the whole people seem to take in this subject. Sir Charles Reed had been the victim of an economical cry, but in Birmingham, he was glad to say, there had been very little of it. Once a gentleman protested against the palaces which the School Board were building, but there was such an outbreak of enthusiasm that the Board might claim the gratitude of the people for providing palace schools. In America, at the present time, the average taxation for education in many of the largest states is something like 10s. a head. Apply that to England and Wales, and they would have a taxation of eleven and a half millions, whereas our expenditure for educational purposes is only two and a half millions. That points to an appreciation, on the part of the whole people of America, which we are far from rivaling at the present moment.

The second point was the extraordinarily good attendance which is obtained in America in spite of many drawbacks. The attendance of the whole school population of England in 1873—that is to say, of children between five and thirteen years of age—was twenty-eight per cent., according to the Government report. The school age in America is between five and fifteen, and the attendance in the whole of the New England States, and in many of the Western States, averages between fifty-five and seventy-nine per cent., as compared with twenty-eight per cent. in this country. He hoped we might very rapidly overtake that difference, but in the meantime we must give all credit to the Americans for what they have been able to achieve, and must bow our heads before their superior position. They have achieved this result in spite of certain drawbacks, because they have practically no compulsion in America. It has been said that compulsion would do for Prussians but not for Englishmen, and Sir Charles Reed was told that it would do for Englishmen but not for the Yankee; and we would see that a similar change which was experienced in England would come over America.

With regard to the way in which the religious question had been settled in America, the only remark he had to make was that it had not been settled more there than in this country. Differences of opinion obtained there as with us; but it was a remarkable and significant fact that the hitherto silent President of the United States should at last have found voice to express a strong and distinct opinion with reference to the maintenance of the existing state of education in America, and the preservation of its absolutely unsectarian character. Although the Americans have not entirely overcome the difficulty, and have provided us with an easy solution of our problem, yet he thought we had an indication of the future in that remarkable and significant fact. As to free schools, he would only say that he would challenge any one to find in the statements of any of the prominent educationists in America—being an official of a county, or state, or a superintendent of schools—any opinion against the free school system. The whole opinion of educationists in America, those who have the management and superintendence of education, is in avor of free schools. That individuals might hold a different opinion was probable enough, but officials, without exception, are in favor of the system which is now being universally established, which is gradually finding its way all over the states, and which is getting into those states where the rate bill previously prevailed, that is, schools in which payment was demanded. He did not say that was a conclusive argument in support of the system; still, when the people were so thoroughly satisfied with the result of the experiment, it was rather a strong thing for persons outside to assume the failure of the system.

RADICAL REFORM OF ALPHABET.

AN English writer, George Withers, of Liverpool, in his important work, "The English Language Spelled as Pronounced," makes the following clear and reasonable statement of the necessity for a completion of our alphabet:

To strike at the *root* of an evil is surely the best way to eradicate it. If education is a necessity for the whole population, if reading and writing are essential as instrumentary acquirements, if a defective alphabet and orthography operate practically as a bar to their common attainment, in the name of common sense, *let the English alphabet be enlarged*, and let English spelling be reduced from its present state of confusion and difficulty to a state of order, reason and simplicity. An alphabet that is *incomplete* and inadequate to the requirements of the language,

needs to be *completed*. An Orthography which is "a labyrinth, a chaos," or, as the present learned Bishop of St. David's expresses it, "a mass of anomalies, the growth of ignorance and chance, equally repugnant to good taste and to common sense,"—such an orthography needs reforming. It is not a new alphabet that is required, but the present English alphabet enlarged, completed, adapted to the English language in accordance with English usage. Let educationists look calmly into this question of alphabetic and orthographic reform, and they will find in it a solution of much that at present perplexes them, and hinders the important and necessary work of general education.

An alphabet may be defined, in general terms, to be a collection of letters conventionally employed to represent the elementary sounds of any language. These elementary sounds are reducible into vowels and consonants. When these two elements are united they form what is called a syllable. Out of these vowels, consonants and syllables, all the words of our spoken language are built up.

It should be an invariable principle in any alphabetic system, (1) that each vowel and each consonant element should have *one* single letter appropriated to it, and (2) that any such letter should be incapable of representing any other vowel or consonant. Hence no single vowel or single consonant ought ever to admit of being represented by two or three letters.

The perfection of an alphabet consists in having just as many letters as there are elementary sounds in the language for which it is required. In the application of such an alphabet, written or printed words should be a scrupulously exact representation of the spoken words; just as the picture of an object should be an exact representation of the same, and not a caricature.

Measured by this standard, our present English alphabet will be found to be miserably defective, and our spellings the most outrageous caricatures of the spoken words that it is possible to conceive. "We violate every principle of a sound alphabetical system more outrageously than any other nation whatever. Our characters do not correspond to our articulations, and our spelling of words cannot be matched for irregularity and whimsical caprice."

OUR own views on the question of State uniformity of text books are well known to all our readers. We have no objections, however, to giving all sides a hearing. In this spirit of fairness we print the following communication:

MR. EDITOR: There is a subject that I would like to bring before the people of this state, and knowing that your *Journal* has a large circulation among those interested in the public schools, I send my ideas to you for publication. While acting as director in our district, I noticed that one of the greatest hindrances to the success of our schools is the failure of parents to supply the children in attendance with the required text-books. This has led me to inquire into the matter. On examination, I find that, to a great extent, it is on account of the parents not being able to buy so many different books. Many families who are dependent entirely on the public school for the education of their children, move frequently from place to place. In order to send their children to school, they are under the necessity of making just as many changes in school books.

A family cannot move from one township to another without making a change of books. The families are generally poor, and the result often is that one-half of the children in a school do not have the books authorized by the township they then reside in. In some of the western states the same books are used throughout the state. This plan is much more satisfactory, and gives people more encouragement to buy books, as they can use them in any part of the state in which they may reside. The books should be selected by the superintendent of public instruction. Under the present law—which allows the board of directors of each township to select for their own township—often very injudicious selections are made. The great aim of our public schools is to educate the masses, especially the children of the poor. How much more thoroughly this can be done, and how much more satisfactory it would be on the part of the teachers, if we had uniform text books throughout the state! I think a law authorizing this would meet the universal approbation of all who have children to send to school.

Black Lick, Pa. A. H. DONALDSON.

The School-Room.

BASE-BALL SYSTEM OF SPELLING.

1. Select two pupils from the class, and let them divide it into two parts, by choosing, first one and then the other, until all are chosen.

2. You will now have two classes or sides, known as Side No. 1 and Side No. 2. Have the members of each side numbered, 1, 2, 3, 4, &c. Consider the first four on each side critics, and have them correct on four points, namely: Orthography, Orthoepy, Syllabication and Indistinctness. There may be more or fewer points of correction, but the above points may be the most important.

3. Pronounce words to Side No. 1 first, beginning at No. 1 of that side. While Side No. 1 is spelling, Side No. 2 will watch for mistakes, and when a mistake is made on one or more of the points of correction, those on the opposite side seeing the mistake, will raise hands and the teacher will simply say, *Critic*. The first critic on the opposite side, will take up the word, mention the point of correction, and if full correction is made, the teacher will say, *Right*, and the scorer will tally it as one out, as will be indicated in a score below.) Proceed in this manner until three outs or mistakes have been made. This side which has just been spelling, or batting (it may be called,) will take the field, or watch for mistakes, correcting such mistakes until three outs have been on made Side No. 2.

The two sides have now played, or spelled, one inning apiece, and nine such inning make a game. A dot or period will be placed after the third out, in the score, and when three mistakes or outs have been made, the scorer will say, Change sides and begin at No. — or at the point of leaving off in the last inning. Proceed in this way until the nine innings have been spelled, when the game will be completed. The pupils will now be very anxious to have the tallies counted, to see which side wins. After one game has been played, or spelled, it will not be necessary to choose new sides, but you may spell a return match or a second game, and in case the side beaten in the first game should win the second game, a third game

may be played to decide which side won the victory. By pursuing this course, you will need to choose sides but once in about two weeks. One pupil will score or keep tally one game only, after which he will take his place in the class, and another will score. The scorer is supposed to study his lesson the same as if spelling. If a mistake be made and not noticed by any on the opposite side, the teacher will pass on as if all was right, speaking of the mistake after the recitation is over. The point of correction should always be mentioned before the critic proceeds to correct.

SIDE NO. 1.

	1st Inning.	2d Inning.	3d Inning.	4th Inning.	5th Inning.	6th Inning.	7th Inning.	8th Inning.	9th Inning.	Total. . . .
A or No. 1.	11	11	. .	1						5
B " 2.	11	10.	. .	0						3
C " 3.	01	0	1	0						2
D " 4.	10	11	1	0						4
E " 5.	0	11	0							2
F " 6.	1	11	0							3
G " 7.	1	01	0							2
										21

SIDE NO. 2.

	1st Inning.	2d Inning.	3d Inning.	4th Inning.	5th Inning.	6th Inning.	7th Inning.	8th Inning.	9th Inning.	Total. . . .
A or No. 1.	11	01	11							5
B " 2.	10	11	10.	1						5
C " 3.	11	10	1	0						4
D " 4.	01	1	11	1						5
E " 5.	10.	11	10	0						4
F " 6.	0	11	10	0						3
G " 7.	1	01	11							4
										30

The above score shows that four innings have been spelled, also the way to count the tallies. The above game stands 30 to 21 in favor of Side No. 2.

Remarks.—In presenting this system I will answer a few questions which have been asked and also speak of a few objections which persons who do not fully understand it might raise. I have been asked if it would not take too much time to hear a recitation in this way; whether it would not be a long time before pupils could understand this method; and whether too many mistakes would not pass unnoticed. In answer to the first question, I will say that I can hear a lesson of half a page, in the National Speller, in seven minutes. That is the greatest time I have ever taken, and I have pursued the course for three years. I do not follow one system during a whole term. I change from this to the writing system, which I think a good one. In answering the second question, I will say, that I have introduced this method into several schools and never found it to take more than two or three days before all would understand it. In answer to the last question I can say, that, after the first week, when the class fully understand the method, they become so anxious to win the game, (that being natural for all children,) that they watch eagerly, to see that every word is spelled right. There being so great an interest, but few mistakes will pass unnoticed. It is very important to have the class understand the meaning of the terms orthography, orthoepy, syllabication and indistinctness. It is well explained by giving examples of mistakes under each head.—*Horace Witherstine, in Minnesota Teacher.*

UNGRADED SCHOOLS.

THE following excellent Course of Study for the ungraded schools of Wayne county, is received from Co. Supt. D. G. Allen. It is printed in large type, upon a sheet of cardboard of suitable size for hanging upon the wall of the school-room. We commend it to the attention of teachers.

COURSE OF STUDY.

First Grade.—Pupils with Baade's Reading ...se or Primer should be taught: 1. Language 2. To pronounce the words readily at sight; 3. ...spelling with and without book; 4. To read ...ally, noticing pauses and inflections; 5. To read figures and Roman Letters; 6. Count 100 by use of objects.

N. B.—The unit of language being the word, and not the letter, the word should be taught first.

Second Grade.—With the First Reader should be taught: 1. Language; 2. Sounds of letters; 3. To print lesson on slate, and learn script letters; 4. To spell all new words in the lesson and familiar words in common use; 5. To read from a book as though talking; 6. Oral Composition; 7. Additon to 100 by 2's, 3's, 4's, 5's, and Roman table to XXX with combinations.

N. B.—Train the children to see, to do, and to tell. Never allow them to use unnatural tones in reading or speaking.

Third Grade.—With the Second Reader should be taught: 1. Language; 2. Sounds of letters; 3. To select name words, quality words, and action words; 4. To spell and define the words in the lesson and read naturally; 5. To relate in good English what they read; 6. Dictation and short written compositions on slate, using some of the words found in reading lesson; 7. Penmanship from tracing or copy books Nos. 1 and 2; 8. Addition, Subtraction, Multiplication by intellectual and written methods without a book; 9. Oral lessons in Geography.

N. B.—Remember that constant but varied employment is the best means of discipline. Correct all faults in the use of language as they occur.

Fourth Grade.—The reading lessons should at times consist of various selections in order to make the scholars familiar with the different styles of reading. With the Third Reader should be taught: 1. Language; 2. Articulation, Definitions and Spelling; 3. Dictation by paragraphs, and Letter Writing; 4. Language lessons; 5. Composition and Oral Grammar; 6. Penmanship, with special attention to neatness; 7. Arithmetic, with book, to denominate numbers; 8. Oral lessons.

N. B.—"No one knows anything perfectly unless he is able to write it down."

Fifth Grade.—Special attention should be given to the rules of Elocution—using the United States Historical Reader, if possible, otherwise the Fourth Reader. In this Grade should be taught: 1. Language and Grammar, with book; 2. Spelling and defining; 3. The use of dictionary; 4. Business forms of bills, notes, checks, by neatly copying them on

paper; 5. Penmanship and composition; 6. Geography; 7. Arithmetic, with book, and additional business examples should be given by the teacher.

Manners and Morals.—No teacher can expect his pupils to be more manly and courteous or more high-minded and virtuous than he is himself. He must be what he would have the pupils become.

FORENOON SESSION.

Time.	*5th Grade.*	*4th Grade.*	*3d Grade.*	*2d Grade.*	*1st Grade.*
9.00 9.10	OPENING EXERCISES.				
9.10 9.20	Reading st.*	Reading st. and Writing st.	Reading st. and Writing st.	Reading st.	Reading cl.
9.20 9.30				Reading cl.	
9.30 9.50	Reading cl.*			Printing on Blackboards.	
9.50 10.10	A Arithmetic st.	Reading cl.			
10.10 10.25		B Arithmetic st.	Reading cl.		
10.25 10.35			Oral Lessons.		Printing st.
10.35 10.45	RECESS.				
10.45 10.55	A Arithmetic st.	B Arithmetic st.	Writing st.		Reading cl.
10.55 11.20	A Arithmetic cl.				Printing st.
11.20 11.40	A Spelling st.	B Arithmetic cl.			Copying Figures or Recess.
11.40 11.50		B Spelling st.		Reading cl.	
11.50 12.00	A Spelling cl.			Writing st.	

AFTERNOON SESSION.

1.00 1.15	Geography st.	Reading cl.	Reading st.	Printing on Blackboards.
1.15 1.25		B Spelling st.	Reading cl.	
1.25 1.40		B Spelling cl.		
1.40 1.50		Geography st.	Printing on Blackboards.	Reading cl.
1.50 2.10	Geography cl.			Printing st.
2.10 2.25	Grammar st.	B Geography cl.		
2.25 2.45	Penmanship.			
2.45 2.55	RECESS.			
2.55 3.05	Grammar st.	Language st.	Oral Lessons.	
3.05 3.15			Writing st.	Reading cl.
3.15 3.35	Grammar cl.			Home.
3.35 3.50	Drawing or Copying.	Language cl.		
3.50 4.00	Vocal Music or Object Lessons.			

SUGGESTIONS AND REMARKS.

In preparing this programme and course of study the suggestions of various educators have been adopted.

Owing to the poor classifications of our schools, it is not expected that this course of study and programme will *now* suit all the ungraded schools of the county, but it is believed that the gradation and classification of all can, with advantage, be made to comply with it. If the resolutions adopted by the teachers at the county institute, at the session of 1875, are the expositors of purpose, an approximate conformity to the plan will be had without delay.

The advantage of a uniform course of study for all the ungraded schools of the county will be apparent to every teacher on a little reflection.

A methodical course of conversational lessons on objects of common observation should be had daily with primary classess.

Vocal music, object lessons and map-drawing should receive attention.

Two classes only should be organized from the spelling book. The pupils from the Fifth and the clever ones from the Fourth Grade should form the "A" class and the remainder with the expert ones from the Third Grade will form the "B" class. The remaining pupils will find it as much as they can do to master the difficult words in their different lessons. In a similar way two classes in Geography and two in Arithmetic only, need be organized. The elements of these branches and the sciences should be taught to the primary classes by oral lessons. No arrangement has been made for Mental or Intellectual Arithmetic; the whole subject, as far as it has reference to books, should be compressed within the limits of one small work.

By substituting the United States Historical Reader in place of the Fourth Reader, pupils would be made acquainted with the history of the country without loss in reading or elocution.

In all recitations teachers should insist on a full and free tone of voice; the mouth should be opened wide and the vocal organs properly exercised.

The accompanying programme supposes that the pupil will be kept constantly busy, work being as regularly provided for as recitation. "St." means "preparation of lesson in seat," in which pupils need only the indirect attention of the teacher. "Cl." means "class exercise" in which scholars should receive direct attention.

"Writing at seat," in connection with the various studies, is for the purpose of learning to spell and obtaining a good free hand-writing. It preserves individuality, an indispensable characteristic in good writing; while "penmanship" means systematic imitative lessons in copy-book. Both are necessary in order to secnre uniformity and rapidity.

WISE TEACHING.

AT the foundation of all instruction is this principle: "To train up a child in the way he should go, *you must walk in it yourself.*" You must ever be exemplars as well as teachers. To make others true you must be true yourselves; to make others wise, you must be wise. If you preach temperance and practice drunkenness, no one will heed you.

There are two classes of teachers that I observe: One class is pedantic, pompous, self-contained, magisterial. When he stands before children he fills them with awe, instead of playing on their heart-strings by the mighty power of love. Such teaching has few results. The child looks up with awe; the little delicate tendrils of his infant mind cannot reach up and grasp instruction from such a teacher.

The second class of teachers bring sunshine into the school-room. Children turn to them as flowers to the light. There is an atmosphere of sunshine around such a teacher. His own light attracts all to him for their good and growth.

Above all things, teach children what their life is. It is not breathing, moving, playing, sleeping, simply. Life is a battle. All thoughtful people see it so. A battle between good and evil, from childhood. Good influences, drawing us up toward the divine; bad influences, drawing us down to the brute. Midway we stand, between the divine and the brute. How to cultivate the good side of our nature is the greatest lesson of life to teach. Teach children that they lead these two lives; the life without and the life within; and that the inside must be pure in the sight of God, as well as the outside in the sight of men.

There are five means of learning. These are: Observation, Reading, Conversation, Memory, Reflection. Educators sometimes, in their anxiety to secure a wide range of studies, do not sufficiently impress upon their scholars the value of memory. Now, our memory is one of the most wonderful gifts God has bestowed upon us, and one of the most mysterious. Take a tumbler and pour water into it; by and by you can pour no more, it is full. It is not so with the mind. You cannot fill it full of knowledge in a whole lifetime. Pour in all you please, and it still thirsts for more. Remember this: "Knowledge is not what you learn, but what you remember." "It is not what you eat, but what you digest, that makes you grow." "It is not the money you handle, but that you keep, that makes you rich." "It is not what you study, but what you remember and reflect upon, that makes you learned."

One more suggestion:

Above all things else, strive to fit the children in your charge to be useful men and women; men and women you may be proud of in after life. While they are young, teach them that far above physical courage, which will lead them to face the cannon's mouth—above wealth, which would give them farms, and houses, and bank stocks and gold—is moral courage; that courage by which they will stand fearlessly, frankly, firmly, for the right. Every man or woman who dares to stand for the right when evil has its legions, is the true moral victor in this life, and in the land beyond the stars.—*Schuyler Colfax.*

VIGOROUS STUDY.—There is nothing so wearisome as languid study; when you sit looking at the clock, wishing the time was over, or that somebody would call for you and put you out of your misery. The only way to study with any efficiency, is to do it so heartily that dinner-time comes two hours before you expected it; to sit with your Livy before you, and hear the geese cackling that saved the capitol; and to see with your own eyes the Carthaginian suttlers gathering up the rings of the Roman knights after the battle of Cannae, and heaping them into bushels.

SUGGESTIVE.—A good Quaker, eighty-five years of age, whom no one ever heard speak a cross word, was asked by a young man how he had been able, through the trials and perplexities of a long life, always to keep a pleasant manner. He replied, "Dayton, if thee never allows thy voice to rise, thee will not be likely ever to get very angry."

OFFICIAL DEPARTMENT.

DEPARTMENT OF PUBLIC INSTRUCTION,
HARRISBURG, May, 1876.

THE Annual Examinations at the several State Normal Schools will take place as follows:

Kutztown—commencing at 1 o'clock, p. m. on Thursday, June 1.

West Chester—at 1 p. m. on Monday, June 12.

Shippensburg—at 1 p. m. on Thursday, June 15.

Edinboro—at 1 p. m. on Tuesday, June 20.

Mansfield—at 1 p. m. on Thursday, June 22.

Bloomsburg—at 1 p. m. on Monday, June 26.

California—at 1 p. m. on Thursday, June 29.

Millersville—at 1 p. m. on Wednesday, July 5.

The State Superintendent, or Deputy, will be present at each of the examinations.

The Principles of the several schools will attend the examinations as follows: Prof. Hays, at Kutztown; Prof. Brooks, at West Chester; Prof. Maris, at Shippensburg; Prof. Fairfield, at Edinboro; Prof. Griswold, at Mansfield; Prof. Cooper, at Bloomsburg; Prof. Horne, at California; and Prof. Verrill, at Millersville.

Superintendents Baer and Newlin will serve on the Board of Examiners at Kutztown; Supts. Eastburn and Rambo, at West Chester; Supts. Hughes and McNeal, at Shippensburg; Supts. Jones and Prather, at Edinboro; Supts. Keeney and Transeau, at Mansfield; Supts. Wright and Noetling, at Bloomsburg; Supts. Silveus and Whipkey, at California; Supts. Shaub and Shelley, at Millersville.

All the Superintendents of the several Normal School districts are official visitors under the law, and should be present at the proper examination to witness and give advice concerning the proceedings.

The expenses of the members of the Boards of Examiners will be paid by the state. No one appointed as member of a Board can be absent without securing the services of another person of the same class to take the place of his own.

A student must receive four affirmative votes out of five, in order to graduate.

The following rules concerning the examinations will be in force:

1. The classes, especially when large, shall be broken up into sections, and each section be examined by itself.

2. The examinations shall be strictly private, no persons being admitted except the members of the Faculty, the Board of Trustees, and invited guests.

3. The voting shall be done by ballot.

4. The result of the examination shall be announced to the class by the President of the Board.

The State Superintendent hopes to find at all the schools the minutes of the proceedings of the several Boards of Examiners which have held sessions at these schools fully written up, including complete lists of all graduates, both of the first and second degree, and of all persons receiving teachers' certificates, and inserted at length in the blank books furnished by this Department.

J. P. WICKERSHAM,
Supt. Pub. Instruction.

CENTENNIAL FUND.

THE additions to the Centennial Fund, made since the date named in the last issue of *The Journal*, will be found below, together with the total contributed by each county. We hope to increase the list of contributing districts very largely the coming months. What we have done with the money needs only to be SEEN in order to bring the desired FIVE DOLLARS from all:

Adams.—Previously reported, $13.00. Total, $13.

Allegheny.—Previously reported, $50.00; N. Versailles, $5.00; Scott, $10.00; Patton, $5.00; Sewickley boro., $10.00; Shaler, $5.00; Schools of Snowden, $10.00; Pine, $3.25; Verona borough, $10.00. Total, $108.25.

Armstrong.—Brady's Bend, $10.00; Hovey, $5.00. Total, $15.00.

Beaver.—Previously reported, $23.50; Raccoon, $5.00; Freedom bor., $5.00; Phillipsburg S. O. School, $10.00; Beaver, $5.00; Logstown, Ind., $2.00; Beaver Falls, $15.00. Total, $65.50.

Bedford.—Previously reported, $35.00. Total, $35.00.

Berks.—Previously reported, $15.00; Robeson, $10.00; Cærnarvon, $5.00. Total, $30.00.

Blair.—Previously reported, $15.00; Altoona, $15.00. Total, $30.00.

Bradford.—Previously reported, $30.00; Wyalusing, $5.00; Granville, $5.00. Total, $40.00.

Bucks.—Previously reported, $70; Warminster, $5.00; Middletown, $10.00; Morrisville, $3.00; Southampton, $5.00; U. Makefield, $5.00; Quakertown, $5.00. Total, $103.00.

Cambria.—Previously reported, $15.00; Carroll, $5.00; Johnstown, $15.00. Total, $35.00.

Cameron.—Previously reported, $5.00; Grove & Gibson, Ind., $5.00; Gibson, $5.00. Total, $15.00.

Carbon.—Previously reported, $30.00; East Penn, $5.00; Franklin, $20.00. Total, $55.00.

Centre.—Previously reported, $47.50; Farmers' Mills, $5.00; Howard, $5.00; Patton, $5.00. Total, $62.75.

Chester.—Previously reported, $133.31; W. Bradford, $5.00; Unknown, $13.75; E. Fallowfield, $10.00; E. Brandywine, $10.00; W. Marlboro, $15.00; Phœnixville, $10.00; E. Nottingham, $5.00; Caln, $5.00; Wallace, $5.00; L. Oxford, $10.00; Schuylkill, $5.00. Total, $227.06.

Clarion.—Previously reported, $28.00. Total, $28.00,

Clearfield.—Previously reported, $20.00, Total, $20.00.

Clinton.—Previously reported, $5.00; Renovo, $15.00. Total, $20.00.

Columbia.—Previously reported $20.00. Total, $20.00.

Crawford.—Previously reported, $60.00. Total, $60.00.

Cumberland.—Previously reported, $50.00; Upper Allen, $5.00; Silver Spring, $5.00. Total, $60.00.

Dauphin.—Previously reported, $15.00; Hummelstown, $5.00; Derry, $10.00; Berrysburg, $5.00; Lykens, $10.00. Total, $45.00.

Delaware.—Previously reported, $95.00; Upper Chichester, $10.00; Bethel, $10.00; Aston, $10.00; Lower Chichester, $10.00; North Chester, $5.00; Darby boro., $5.00. Total, $145.00.

Erie.—Previously reported, $30.00. Total, $30.00.

Fayette.—Previously reported, $51.10; Springhill, $10.00. Total, $61.10.

Franklin.—Previously reported, $25.00; Hamilton, $5.00. Total, $30.00.

Huntingdon.—Previously reported, $20.00; Huntingdon, $10.00. Total, $30.00.

Indiana.—Previously reported, $15.00; Mahoning, $5.00; Brush Valley, $5.00. Total, $25.00.

Jefferson.—Previously reported, $5.00. Total, $5.00.

Juniata.—Previously reported, $10.00; Fayette, $5.00; Thompsontown, $5.00. Total, $20.00.

Lancaster.—Previously reported, $88.00; New Milltown, $5.00; Ephrata Lyceum, $7.15; Manheim, $5.00; Adamstown, $5.00; E. Donegal, $10.00; Millersville Normal School, $75.00. Total, $195.15.

Lawrence.—Previously reported, $5.00; Plain Grove, $5.00; Wilmington twp., $5.00; N. Beaver, $5.00. Total, $20.00.

Lebanon.—Previously reported, $15.00. Total, $15.00.

Lehigh.—Previously reported, $15.00; White Hall, $10.00. Total, $25.00.

Luzerne.—Previously reported, $115.00; Benton, $5.00; Hazle twp., $10.00; Kingston, $10.00; Nanticoke, $5.00; Plymouth, $10.00; Pleasant Valley, $5.00; Dennison, $5.00. Total, $165.00.

Lycoming.—Previously reported, $40.00; Cascade, $5.00; Long Reach, $5.00. Total, $50.00.

McKean.—Previously reported, $5.00; Sergeant, $5.00. Total, $10.00.

Mercer.—Previously reported, $35.82; Findley, $10.00; Greenville, $10.00; Wheatland, $10.00. Total, $65.82.

Mifflin.—Previously reported, $10.00; Freedom, $5.00. Total, $15.00.

Monroe.—Previously reported, $5.00. Total, $5.00.

Montgomery.—Previously reported, $65.00; Montgomery, $5.00; U. Providence, $10.00; Unknown, $10.00; Hatboro, $5.00. Total, $95.00.

Montour.—Previously reported, $15.73. Total. $15.73.

Northampton. — Previously reported, $20.00; Easton, $10.00; Moore, $5.00; U. Mt. Bethel, $5.00. Total, $40.00.

Northumberland.—Previously reported, $55.00; Gearhart, Ind., $5.00; L. Saucon, $5.00; Sunbury, $10.00; Coal, $20.00. Total, $95.00.

Perry.—Previously reported, $20.00. Total, $20.
Pike.—Previously reported, $5.00. Total, $5.00.
Potter.—Previously reported, $10.00. Total, $10.00.
Schuylkill.—Previously reported, $90.00; Yorkville, $5.00; Gilberton, $10.00; Tamaqua, $10.00; Minersville, $10.00; St. Clair, $10.00; E. Norwegian, $5.00; Pottsville, $50.00. Total, $190.00.
Somerset.—Previously reported, $15.00. Total, $15.00.
Susquehanna.—Previously reported, $15.00; Unknown, $5.00. Total, $20.00.
Tioga.—Previously reported, $5.00. Total, $5.00.
Union.—Previously reported, $5.00. Total, $5.00.
Venango.—Previously reported, $35.00; Clinton, $10.00; Emlenton, $5.00; Oil City, $5.00. Total, $55.00.
Warren.—Previously reported, $20.00; Limestone, $10.00. Total, $30.00.
Washington.—Previously reported, $49.85; Allen, $5.00; Cross Creek, $21.70; Independence, $5.00. Total, $81.55.
Wayne.—Previously reported, $25.00; Cherry Ridge, $5.00; Texas, $10.00; Dyberry, $10.00. Total, $50.00.
Westmoreland.—Previously reported, $45.00; New Alexandria, $5.00; E. Huntingdon, $23.00; Ligonier, $5.00. Total, $78.00.
York.—Previously reported, $30.00; Hopewell, $9.45. Total, $39.45.
Unknown Districts.—Previously reported, $13.00.
Whole amount received up to April 15, $2,879.36.

SPECIAL CONTRIBUTIONS.

THE following special contributions are included in the above, but we desire that they should also go on record by themselves:

The directors of West Earl township, Lancaster county, contributed $10.00 out of their own pockets. $5.00 were contributed in the same way by five directors of Thornbury, Chester county.

Samuel Martin, of Kennett Square, Chester county, sent $5.00, and Dr. W. G. Taylor, Principal of the Philipsburg Orphan School, sent $10.00.

Citizens of Mahonoy, Montour county, forwarded $5.73; and citizens of Coopersdale, Cambria county, forwarded $5.00.

From a Spelling Bee at Paupack, Wayne county, we received $5.00; and from one held in Franklin township, Carbon county, we received $20.00; $5.00 of the twenty was contributed by Miss Ressler to whom it was awarded as the first prize.

The schools of Snowden, Allegheny county, contributed $10.70.

The West Marlborough Literary Society, Chester county, contributed $15.00; and the Ephrata Lyceum Association, Lancaster county, contributed $7.15.

The students and faculty of the State Normal School, at Millersville, raised and forwarded the handsome sum of $75.00.

ITEMS FROM LATE REPORTS.

BEDFORD.—Have visited all the schools in the county except two that were already closed. The directors of St. Clair township have done themselves great credit and the cause of education good service in the two new houses they erected during the past summer. The interest taken in the convenience and comfort of the pupils of the Fishertown school is plainly seen in the latest improved desks which they have put into their room. It is a "live" school.

CAMBRIA.—Much interest was manifested in the educational meetings held at Ebensburg and Johnstown during the past month.

CHESTER.—Schools are generally doing well. We have had more male teachers employed during the past winter than within the last four years.

CENTRE.—The Bible is read in all our schools, and I have not heard of any objections to it in any part of our county.

FULTON.—In my opinion the school work was better this winter than I have ever known it.

GREENE.—The district institutes held during the winter were well attended both by teachers and citizens.

LEHIGH.—Nearly all our schools in the rural districts have closed. Our teachers, as a class, were earnest and faithful in their work. We have fewer failures in teaching than in any previous year.

NORTHAMPTON.—I have devoted most of my time during the month in the interest of the "Centennial."

NORTHUMBERLAND.—Have visited nearly all the schools in the county and have found nearly all doing good work. Teachers are becoming more active, parents awakening from their lethargy and rallying to the cause of education.

PERRY.—Nearly all the schools in the county have closed. The attendance during the winter term has been very good.

PERMANENT CERTIFICATES GRANTED.

NO.	NAME.	RESIDENCE.
1577	Miss Sue Girvin . .	Lancaster, Lancaster co.
1578	Miss Jennie Wiley .	Carmichaels, Greene co.
1579	J. H. Dungan. . .	Baden, Beaver co.
1580	Miss L. A. King .	Wakefield, Lancaster co.
1581	Miss H. Epright .	Reeseville, Chester co.
1582	Miss L. A. Carothers	Uniontown, Fayette co.
1583	Miss M. F. Hoffman	Coatesville, Chester co.
1584	Miss T. McPherson	Downingtown, "
1585	J. B. Setzler . . .	Spring City, "
1586	Geo. W. Harpel . .	Bismarck, Lebanon co.
1587	J. C. Crawford . .	Athens, Bradford co.
1588	F. J. Stauter . . .	Millway, Lancaster co.
1589	W. P. Albright . .	Akron, "
1590	C. W. Myers . . .	Lincoln, "
1591	J. B. Patrick . . .	Clarion, Clarion co.
1592	Miss M. H. Erisman	Lancaster, Lancaster co.
1593	Miss M. E. Palmer.	" "
1594	Miss C. B. Huber .	" "
1595	Miss E. L. Downey	" "
1596	J. E. Cochran. . .	Cochranville, Chester co.
1597	E. S. Wells. . . .	Reeseville, "
1598	Wm. H. Snyder. .	Oxford, "
1599	Miss J. Creswell. .	Londonderry, "
1600	Miss L. W. Worley.	Norway, "
1601	D. L. Sherrick . .	Scott Dale, Westmorel'd co
1602	C. B. Wakefield . .	Bellevernon, Fayette co.
1603	Henry Aubley . .	Pennsville, "
1604	R. V. Rittenour . .	Farmington, "
1605	O. E. Nail	Clarion, Clarion co.
1606	Miss A. J. Hall . .	New Castle, Lawrence co.
1607	W. H. Curtis . . .	Smethport, McKean co.

CHANGE OF ADDRESS.—The address of Robert Curry, Deputy State Supt., has been changed from Harrisburg to Pennsylvania Educational Hall, Centennial Grounds, Philadelphia.

BOOK NOTICES

PRACTICAL BOOK-KEEPING.—*Single aad Double Entry. By John Groesbeck, Consulting Accountant. Author of the "Crittenden Commercial Arithmetic and Business Manual." Large Octavo. Pp.: 255. Price, $2.00. Philadelphia: S. H. Crittenden & Co.*

The commercial school has made its place among the educational agencies of the time, and among institutions of this class the Crittenden College has long held honorable rank. The text-book under notice presents the important subject of Book-keeping as it is taught in this excellent training school. It presents the methods of "keeping books" as approved in most business houses, and gives an extensive variety of transactions under the several sets of books. The questions for review have been carefully prepared and will be found useful to both teacher and taught; to the latter in testing his acquaintance with the subject, to the former in making a close and searching examination upon all points of interest developed in the progress of the student. It is eminently a practical text-book, and one to be heartily commended.

AUTHORS.—*Biographical Sketches of the Authors Represented in the Little Classics. Edited by Rossiter Johnson. Pp.: 262. Boston: J. R. Osgood & Co. Price, $1.00.*

The sixteenth volume of the Little Classics completes this series of books for the pocket. It contains a general index of the contents of the preceding fifteen volumes, and presents a brief sketch of each author whose work has been "sampled' in the series as presented. The wide range of these selections may be inferred, when it is known that sketches are here given of no less than one hundred and fifty authors, English and American.

RELIEF MAP OF PENNSYLVANIA.—*By J. Schedler. Size, 10x13 inches. Price, in plain Walnut Frame, $1 50. New York: E. Steiger.*

The hills and valleys of the Keystone State are here represented by elevations and depressions of surface, and the numerous ranges of hills and mountains that cross the state, diagonally, from northeast to southwest, impress the fact that Pennsylvania is by no means a prairie state. The physical geography of the country may be better shown upon the relief map than upon the ordinary plain surface. This is, we believe, the first of a series of maps, upon the same plan, projected by Mr. Steiger. We commend it to the notice of teachers.

ELEMENTS OF THE INFINITESIMAL CALCULUS.—*With Numerous Examples and Applications to Analysis and Geometry. By James G. Clark, A. M. Pp.: 441. Cincinnati: Wilson, Hinkle & Co. Price, $2.25.*

The author regards the difficulties presented by the calculus to be due, in so far as they are not purely algebraic, "quite as much to the manner in which its first principles are usually exhibited as to any inherent obscurity in the subject itself." To render the subject as intelligible as possible, considerable space has been devoted to an exposition of the doctrine of limits, which has been made the basis of both the Differential and the Integral Calculus. The volume is issued in the clear type and substantial binding which characterizes the publications of Messrs. Wilson, Hinkle & Co.

PUBLIC SCHOOL FRENCH GRAMMAR.—*By Auguste Brachet, Ancien Examinateur et Professeur a l'ecole Polytechnique, etc. Adapted for use of English Schools, by the Rev. P. H. E. Brette, and Gustave Masson, Examiners in the University of London, 16 mo. Pp. 317. Philadelphia: J. B. Lippincott & Co.*

Designed for the study of the French language through the medium of comparative grammar, it assumes for the student some knowledge of language generally, and attempts to show that historical philology accounts for every grammatical fact. In the opinion of the writer—an indifferent French scholar—the work is, on general principles, philosophical, and therefore valuable for the study of the French language. The author gives an introduction on the history and geography of this language, and carries throughout his design of tracing up the modern French to its origin. The English translators have added a biographical list of all the persons quoted in the grammar. They express the hope that their translations will be received with as much favor as the original has obtained "on the other side of the channel;" and the area of its conquests may well be extended to this side the Atlantic.

RATIONAL METHOD OF LEARNING FRENCH.—*By Claude Marcel, Late French Consul, Member of the Society for the Diffusion of Elementary Instruction, Etc. Pp: 209. New York: D. Appleton & Co.*

FRENCH CHILDREN AT HOME.—*An Introduction to French as Spoken in Paris. By Madame de Peyrac. Pp: 135. New York: D. Appleton & Co.*

The first named book, a reprint from the second Paris edition, is as well adapted for use in France as in England or America, all the even pages being English, all the odd pages French. The inflections, the parts of speech, and principles of grammatical construction, are wholly ignored as such, the design being to give the pupil a good vocabulary and a ready acquaintance with the idiom of the new language—in a word, something upon which to use the measuring line, square and compass, etc, that must presently be supplied by the technical grammar. The text-book last named is upon the same general plan, that of training the ear, and of thinking and speaking in a foreign tongue the thoughts and language of children

HISTORY OF THE UNITED STATES.—*By J. A. Doyle, with Maps by Francis A. Walker. 16 mo. Pp.: 404. New York: Henry Holt & Co. 1876.*

This, the sixth of Mr. Freeman's series, is an American history by an English author. Mr. Doyle treats us with such fairness that the reader is obliged to accept his judgment, even though examining the work with Centennial hostility to British criticism. It is valuable not only as presenting our history in a truthful light to the English student, but also as giving to Americans a history of their country with less of partisan bias than is generally attained by a home writer. Maps are inserted, illustrating the changes of territory and the increase of population, showing that the centre of population has moved steadily westward from Philadelphia, in 1790, to Cincinnati, in 1870. There is a chronological table, a list of presidents, a table of population, and a complete index.

A TEACHER.—Charles Sumner once paid the following tribute to Justice Story: "Besides learning unsurpassed in his profession, he displayed other qualities not less important in the character of a teacher —goodness, benevolence, and a willingness to teach. Only a good man can be a teacher, only a benevolent man, only a man willing to teach. He was filled with a desire to teach. He sought to mingle his mind with that of his pupil. He held it a blessed office to pour into the souls of the young, as into celestial urns, the fruitful water of knowledge. He well knew that the knowledge imparted is trivial compared with that awakening of the soul under the influence of which the pupil himself becomes a teacher. All of knowledge we can communicate, is finite; a few pages, a few chapters, a few volumes, will embrace it. But such an influence is of incalculable power; it is the breath of a new life; it is another soul. In Story, the spirit spake, not with the voice of an earthly calling, but with the gentleness and self-forgetful earnestness of one who was pleading in behalf of justice, of knowledge, of human happiness. His well-loved pupils hung upon his lips, and as they left his presence, confessed a more exalted reverence for virtue, and warmer love of knowledge for its own sake."

COULD not something be done, in our smaller towns it may be, towards collecting the boys from the streets in the evening and forming them into a singing society? Though they should meet but once a week, how much good might thus be accomplished.—*Mers.*

MEEK AND LOWLY.

Music by S. GLOVER.
Author unknown.

Slowly.

1. Meek and low . ly, pure and ho - ly, Chief a - mong the "Blessed Three," Turning
2. Hop - ing ev - er, fail - ing nev - er, Tho' deceiv d, be - liev-ing still; Long a-

sadness in - to gladness, Heav'n-born art thou, Char - i - ty! Pit - y dwelleth in thy
bid-ing, all con - fid - ing. To thy heav'n - ly Father's will; Never weary of well-

bosom, Kindness reigneth o'er thy heart; Gentle thoughts a-lone can sway thee, Judgment
do-ing, Nev - er fear-ful of the end; Claiming all mankind as brothers, Thou dost

hath in thee no part.
all a - like befriend.
} Meek and low - ly, pure and ho - ly, Chief a - mong the "Blessed

Three," Turning sad - ness in - to gladness, Heav'n-born art thou, Char-i - ty.